

ENGINEER'S REPORT

4718 Menlo Park Drive
Sugar Land, TX 77479

Prepared for:

Eric Blossom

Prepared by:



Criterium—Farrell Yancy Engineers
Texas Registered Engineering Firm F-13019
4434 Bluebonnet Drive, Suite 115
Stafford, Texas 77477

(281) 491-1262

WWW.CRITERIUM-FARRELLYANCY.COM



John Mulvahill, P.E.

Inspection No. 2020113S

Date of Inspection: May 6, 2020

The seal appearing on this document was authorized by John M. Mulvahill, P.E. 62080 on the date of inspection. The signed original is maintained in our file if not delivered to the client.

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INTRODUCTION

The report that follows has been prepared from the perspective of what an owner of this property would benefit from knowing. Thus, it discusses many things beyond those that are of immediate concern. Therefore, the report needs to be read in its entirety to understand fully all the information that has been obtained.

At your request, a limited structural and mechanical inspection was performed on the above property. The report that follows has been prepared based on that inspection. This inspection was performed by and report written by John Mulvahill, P.E.

Our primary purpose is to provide an understanding of the home you are considering and the conditions existing at the time of the inspection. This report is based on an examination of the major systems in this building; specifically, the heating, air-conditioning, plumbing, electrical, and structural systems. This report is an opinion about the condition of this building. It is based on visual evidence available during a diligent inspection of all reasonably accessible areas. No surface materials were removed, no destructive testing undertaken, or furnishings moved. It is not uncommon for properties to have some interior and exterior walls, interior spaces (e.g. closets and under sinks) and windows obscured from view and inspection structurally and mechanically due to wall coverings, stored items, debris, window treatments, boxes, clothing and furnishings, etc. We strongly recommend visually rechecking the interior and exterior walls, windows and mechanical/electrical/plumbing components for previously hidden defects or deficiencies when the home is vacant and/or obstructions are removed. We have included a pre-title check sheet to help facilitate this inspection. In addition, insulation in the attic can cover some structural, electrical, mechanical and plumbing components, which can preclude the inspection of these hidden items. We do, of course, look for problems, particularly those we would consider major deficiencies. Please keep in mind that we generally define a major deficiency as one that would cost approximately \$1,000.00 or more to correct. Any home will have minor items deserving attention. Often these are matters of personal preference. It is not the intent of our inspection to detail every minor defect we might find.

This inspection and report do not include code compliance, mold investigations, environmental investigations, indoor air quality analysis, municipal regulatory compliance, subsurface investigation, verification of prior uses, or records research related to this building. This report is not an exhaustive technical evaluation. Such an evaluation would cost many times more.

Our inspection does not make any attempt to know or verify the prior uses of this property and cannot determine whether or not illegal activities have been engaged in, on or near the property, including but not limited to, the use or manufacture of illegal substances, criminal events or the presence of substances banned or controlled by federal, state or local law. If this is of concern to you, we recommend that you make appropriate inquiries into past uses to resolve your concerns.

Owning any building involves some risk. Even the most comprehensive inspection cannot be expected to reveal every condition you may consider relevant to your ownership. Further, without disassembling the building, not everything can be known. The report is not to be considered a guarantee of condition and no warranty is implied.

You, as a responsible buyer, should examine the portions of this building for which you are most able to judge acceptability. This includes such things as floor coverings, interior wall finishes, appliances, etc.

As Professional Engineers, it is our responsibility to evaluate available evidence relevant to the major systems in this building. We are not, however, responsible for conditions that could not be seen or were not within the scope of our service at the time of the inspection. This inspection and report have been conducted in compliance with the standards of practice of Criterium-Farrell Yancy Engineers and in a manner consistent with that level of care and skill that is ordinarily exercised by members of the profession practicing under similar conditions at the time the services are performed.

This inspection of the foundation of this building was limited to a "Level B" evaluation as defined by the Texas Board of Professional Engineers through their recognition of the document titled "Guidelines for the Evaluation and Repair of Residential Foundations" as issued by the American Society of Civil Engineers, Version 2, May 1, 2009 as well as the document titled Guidelines for the Evaluation of Foundation Movement for Residential and Other Low-Rise Building", FPA-SC-13-1 as issued by the Foundation Performance Association, April 11, 2015.

Any home, regardless of code compliance requirements, should satisfy basic engineering principles and good construction practice. We have considered these principles when evaluating the capacity of the framing, the adequacy of the heating and air conditioning system, and other components where the choice of materials, their capacity, and their installation are relevant to future performance of this home.

Texas law allows only persons who possess a valid "Structural Pest Control Business License" to inspect or make reports with respect to pest infestations including wood destroying insects and other organisms such as fungus (causing wood rot). This report is not a termite inspection and no responsibility is assumed for any damage caused by wood-destroying organisms.

For your reference while reading the report that follows, the following definitions may be helpful:

- | | |
|------------------|---|
| <i>Excellent</i> | Component or system is in "as new" condition requiring no rehabilitation and should perform in accordance with expected performance. |
| <i>Good</i> | Component or system is sound and performing its function, although it may show signs of normal wear and tear. Some minor rehabilitation work may be required. |
| <i>Fair</i> | Component or system falls into one or more of the following categories: a) Evidence of previous repairs not in compliance with commonly accepted practice, b) Workmanship not in compliance with commonly accepted standards, c) Component or system is obsolete, d) Component or system approaching end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life. |

Poor Component or system either has failed or cannot be relied upon to continue performing its original function because of having exceeded its expected performance, excessive deferred maintenance, or state of disrepair. Present condition could contribute to or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

All ratings are determined by comparison to other buildings of similar age and construction type. Further, some details of workmanship and materials will be examined more closely in higher quality homes where such details of workmanship and materials typically become more relevant.

We will be discussing many different subjects in this report as well as offering suggestions for changes and improvements to this home. As you read the report, pay particular attention to our notes regarding the fact that many of our observations and suggestions are typical of many homes we look at. Thus, while it may seem that there is some work to do during the next five to ten years, keep in mind that no home is perfect and all deserve some care, attention and upgrading.

Please note that we may bold or italicize certain observations for your attention. However, you should not assume that these are the only observations of importance in the report. Please be sure to read our report thoroughly and completely.

Correction of any deficiencies or concerns noted in the report should only be performed by licensed professionals.

This written report is the complete response to your request for an inspection of this property and should be read in full. Any verbal statements made during the inspection are made as a courtesy only and are not considered a part of this report. If you have any questions about this report or our inspection, please call our office immediately for clarification. If there is any area of this property where you have a particular concern based either on this report or on your own personal observations, we recommend a more exhaustive technical evaluation.

DESCRIPTION

This home is a 2-story residence with stucco veneer on the exterior walls and an asphalt composition shingle roof surfacing that was apparently built about 1997. The home was occupied at the time of inspection.

Eric & Rosemarie Blossom (buyers), were present at the end of the inspection.

For purposes of this report, all directions (left, right, rear, etc.) are taken from the viewpoint of an observer standing in front of the building and facing it; or, when discussing a specific item, from the viewpoint of standing in front of that component (doorframe, window, etc.).

SITE

General

In many areas of southeast Texas, soils have high contents of expansive clays that swell when wet and shrink when dry¹. Building foundation and structural damage can result from the shrink-swell pressure exerted by the soil. More or less uniform moisture levels can help preclude cyclic expansion and contraction of the soil with its resulting foundation movement.

Observations and Recommendations

Topography of the lot is generally level. Drainage of the property and surrounding area appears to be good.

As a general note, all low spots where excess water can accumulate should be filled and sloped so water drains naturally away from the foundation. We mention this because poor drainage is a frequent contributor to foundation differential movement.

There is an underground drain system into which some of the downspouts empty. It appears that the system drains to the street and/or storm sewer system. Due to the limitations of a visual inspection, this system was not tested for operability. We cannot comment on the integrity of the underground pipes. Periodic maintenance on drain systems like this is required for proper function.

Trees were observed within 18 feet of the foundation at the front of the home. Trees can contribute to differential movement in a foundation in two ways. The roots of trees consume large quantities of moisture from the soil, causing the soil to dry and shrink much faster than other areas. In some cases, tree roots will undermine the grade beam foundation, lifting and cracking the foundation. We normally do not recommend removal of mature trees (unless observations indicate obvious foundation damage) because the decaying roots may have a more detrimental effect.

STRUCTURE

General

Our evaluation of this structure is based on many indirect observations. We cannot see most of the framing. We look for cracks, bulges, and other evidence of distress or deterioration to help us evaluate the condition. As with any limited inspection, it is possible that there are structural deficiencies that cannot be known.

¹ United States Department of Agriculture Soil Conservation Service, "Soil Survey of Harris County", 1976

Observations and Recommendations

The following areas were inaccessible or not visible, and this limited the extent of our structural inspection:

- Portions of the garage attic area at the far perimeters
- Portions of the 2nd floor attic area – 50% (limited attic access)
- Most of the foundation system and slab
- Wall framing (concealed)
- The edge of the slab in some areas

The house has a concrete slab foundation. The type and amount of steel reinforcing in the slab cannot be determined by a visual inspection. However, it is most likely reinforced with post-tension cables spaced uniformly throughout the slab. Post-tension cables provide horizontal containment for the concrete slab so that it resists cracking and separation when exposed to differential settlement. Grade beams under load bearing portions of the house provide the home's foundation. The grade beams are deeper than the rest of the slab and they contain additional steel reinforcing. The roof framing is supported by interior and exterior bearing walls and beams. This is a standard method of construction.

Deficiency:

- **Where visible, we observed one hairline crack at the foundation perimeter grade beam at the front left side home.** There was no height differential from one side to the other, and no shearing movement along the crack. We were not able to determine the extent or if the crack continued any distance across the slab due to the floor coverings. Portions of the foundation perimeter were obscured and some other cracking may exist that was not viewable at the time of our inspection. It should be noted that many slab foundations develop cracks. In our opinion, the degree of visible cracking does not affect structural integrity.

At the time of this inspection, we had not been informed of any prior foundation repairs. If there have been any repairs to the foundation, we were not a party to any repair design or the repair process.

We performed a survey of the 1st floor elevations in the home using an electronic level, which the manufacturer states is reliably accurate to within 1/8th of an inch over a vertical range of plus or minus twenty feet. The majority of measurements obtained were around the perimeter of the home. Adjustments were made to accommodate for steps, changes in floor coverings, and other built-in variances.

We noted minor elevation variance throughout much of the home. In general, we consider differentials of less than 1 inch in 10 feet to be acceptable. All measured differentials are well within that parameter. We noted no patterns of cracking in veneer or drywall, no sticking doors, no abnormal cracks in concrete grade beams, or floor unevenness that would indicate a problem with differential movement of the foundation.

Based on measured and visible evidence, the structural condition of this foundation is average. We consider the foundation structurally sound. With normal care, and attention to maintenance of a stable moisture content in the soil surrounding the foundation, the foundation should continue to be structurally sound for the foreseeable future. Although no damage was observed at the time of the

inspection, soil conditions in this area are known to be unstable. No warranty against future movement can be made.

We do recommend a program of conscientious moisture management of the soil in close proximity to the foundation in an effort to stabilize the moisture content and thus stabilize foundation movement caused by soil expansion and contraction.

The exterior walls of this home appear to be standard wood frame construction. Wall framing generally consists of a sill plate, wall studs, and a top plate (constructed of dimensional lumber). The attic framing is primarily dimensional lumber used as ceiling joists, rafters, ridge boards and purlins. The roof framing is supported by interior and exterior bearing walls and beams. This is a standard method of construction.

Based on areas accessed, no structural problems were observed in the visible framing members.

It should not be assumed that no rot exists in any of the inaccessible areas, especially in areas with past or active moisture intrusion. Rot can result from moisture accumulating underneath the siding, behind trim, or within the wall cavities should insulation or other obstacles restrict the normal drying process. Therefore, it is possible that you will encounter some rot should you at any time undertake any projects that involve disassembly of the portions of this structure normally inaccessible to visual inspection. This is typical for any home.

ROOFING

General

The roof is a system that must work well together to provide weather protection for the home. The major elements in this system include the roofing or roof covering (shingles, tile, membrane), the underlayment (impregnated felt or paper, ice and water shield), metal flashing (lead, copper, aluminum, galvanized steel), sheathing (plywood, OSB board, dimensional lumber boards), and the roof rafters themselves.

Observations and Recommendations

The roof was viewed from the ground using binoculars. It should be noted that some areas of the roof were not visible for our inspection. These areas may have hidden damage that we were not able to observe. If this is a concern to you, we recommend you consult with a licensed roofing professional for further evaluation.

The roof covering of this home is asphalt composition shingle. The roofing is in good condition. According to the Sellers Disclosure the roof covering is approximately 3 years old. Roofs of this type typically last about 15 years or more before major roofing repairs or replacement is required.

Deficiencies:

- **From our observations of the ceilings and attics, there is evidence of past or active roof leaks:**

- **On the master (rear) closet ceiling. We noted that this location is directly below a roof vent.**
- **In the attic, at the living room fireplace chimney. Evidence of past leak repairs were noted in the chimney.**

We recommend evaluation and repairs as necessary by a licensed roofing contractor. Any source of moisture accumulation should be eliminated and the area observed for any evidence of mold growth or moisture related deterioration.

With any roof, regardless of age, minor leakage should be expected from time to time, especially during periods of heavy rain. This can occur along the edges of the roof, at joints between different roof surfaces, and around penetrations through the roof. Normally, these repairs are easily accomplished.

The valleys use an overlay pattern with the shingles called a closed-cut valley. This is a common method of shingling valleys.

Deficiencies:

- **Tree branches were observed to be overhanging and/or in contact with the roof surface at the rear, which can lead to damage/premature aging of the roofing surface.** We recommend trimming back the branches away from the roof surface.
- **Accumulations of tree debris (leaves, needles, twigs, etc.) are present in the roof gutters.** You should anticipate frequent roof maintenance to remove these accumulations.

The roof flashings that are visible from the ground appears to be in good condition. This is typically a weak point in a roof system and periodic leaks and maintenance should be anticipated.

This home is equipped with a gutter and downspout system. While this system was generally operational at the time of inspection, frequent maintenance and periodic repairs should be expected. The gutter downspouts should be made to discharge ten to fifteen feet away from the house where applicable.

VENTILATION

General

Ventilation is very important for all buildings. Attic ventilation will reduce the amount of moisture that can develop in insulated attics and can increase roof shingle life by reducing heat and condensation. Good ventilation yields a healthier living environment as well, as it reduces the accumulation of offensive and/or toxic fumes.

Observations and Recommendations

Attic ventilation is provided by soffit vents and ridge vents. The amount of ventilation appears to be adequate, and there is no evidence of excessive moisture in the attic. It is important that the attic ventilation be kept open and clear the year around.

Indoor air quality is a growing concern. Mold and mildew, fostered by moisture accumulation, can lead to respiratory discomfort and aggravate allergies and other respiratory conditions for some people. While we may comment on readily visible evidence of mold infestations (see the “Environmental” section), this inspection and report should not be considered a mold investigation of any kind. Such an investigation, if desired, should be undertaken by individuals specifically trained and qualified for such work.

EXTERIOR

Observations and Recommendations

The visible exterior stucco is a veneer that has been installed over the wood framing. The stucco veneer appears to be in good condition.

Deficiencies:

- **We observed hairline cracks in the stucco veneer in locations including the front right side, front left side, front left and at the front entry.** These cracks appear to be the result of seasonal temperature (expansion/contraction) changes and are not considered, in our opinion, to be due to any structural deficiency.
- **We observed a crack in the stucco veneer at the left side of the garage door.** Evidence of moisture penetration and corrosion of the wire mesh was noted at this location.

All openings, cracks, etc., in the exterior veneer or siding, or in any location on the exterior envelope of the building, should be caulked or otherwise sealed to prevent water or moisture from entering the building.

Please note this is not a stucco certification. If you have any concerns regarding the stucco, we recommend you contact a qualified stucco professional. We do inspect the siding for visible defects such as cracks and surface damage, but we cannot ascertain the integrity of any hidden materials.

Where visible from the ground, the caulking compound around the window frames and doorframes is in good condition.

Deficiency:

- **We observed exterior light bases and electrical boxes installed on the stucco veneer are missing caulking to seal**

The paint on the exterior of this home is in good condition. Repainting is typically needed every five years. This can vary depending on the type of walls or siding, the quality of the paint used, how well the walls were prepared for repainting, the exposure to direct sunlight, the closeness of trees and bushes to the side walls, etc.

Deficiency:

- **Mildew growth was noted on living room chimney exterior surfaces that receive less direct sunlight.**

Exterior doors are in good operating condition.

The windows in this home are aluminum-framed, single-hung, casement and fixed, single-pane windows. They are generally in good condition.

Deficiency:

- **One dining room window pane chipped.**

Note: We were unable to test the operability of the following windows:

- Master bedroom windows – covered by Plexiglas
- Upstairs casement windows – window lock operation obstructed by shutter frames
- Family room windows secured with screws

Note: We do not account for and inspect window screens during the inspection. Window screens may be missing or damaged.

ELECTRICAL

Limitations

Our investigation of the electrical system is limited to the visible components, the entrance cable, meter box, service panel, outlets and switches, and the visible portions of the wiring. A larger portion of the electrical system is hidden behind walls and ceilings, and, obviously, not all the conditions relating to these unseen areas can be known. Where possible, the cover of the service panel is removed to investigate the conditions in it.

While some deficiencies in the system are readily discernible, not all conditions that can lead to the interruption of electrical service, or that are hazardous, can be identified.

General

A typical electrical system consists of two distinct components: (1) the electric service entrance, and (2) the electric circuits. The service entrance determines the capacity of the electric power available to the home. The electric circuits distribute the power through the home.

Electrical devices in a home typically use either 120 or 240 voltage electricity. The major appliances such as clothes dryers, kitchen ranges, water heaters, air conditioners, and electric heating units require 240 volts. General-purpose circuits (lighting, outlets, etc.) require 120 volts.

Observations and Recommendations

The electrical system for this home consists of a three-wire, 120/240-volt service. It is adequate to serve the needs of this home as it now stands.

Where visible, the general condition of the wiring and fixtures is good.

The main electric service cable comes to the house underground. No excavation on or near the property should be done unless the electric utility has been consulted.

Two main electrical service panels are located in the garage. A subpanel is located on the right side exterior adjacent to the main panels.

The service at this home provides a total of 300 amps, which is adequate for the home.

The service panels had a main breakers, there were no unused breaker openings in the panels, there were no apparent oversized breakers, there was no visible aluminum wiring in the branch circuits, and there were no “piggy back” breakers.

Deficiencies:

- **We observed white wires on 240 volt circuit breakers are not taped or marked black to indicate a hot leg.**
- **The service panel ground rod is severely corroded and requires replacement. The ground rod is the grounding electrode for lightning protection.**
- **It would be wise to have each of the present circuits fully identified in each panel so you will know what electrical load is on each circuit.**
- **The aluminum service entrance wire connections in the service panel were not coated with an anti-oxidant. This can allow the conductors to oxidize, which can be a fire hazard.**
- **This home is not equipped with arc fault circuit interrupters (AFCI) in all locations as required by current code.** Homes permitted / built prior to 2002 are generally not required to have AFCI's. In 2002, the National Electrical Code, Section 210-12, began requiring that all branch circuits supplying 125V, single phase, 15 and 20 ampere outlets installed in dwelling unit bedrooms be protected by an arc-fault circuit interrupter. For homes permitted / built after September, 2008, they are required in more areas (outlets in family rooms, dining rooms, living rooms, etc.). The AFCI breaker will shut off a circuit in a fraction of a second if arcing develops.
- **This house is not equipped with tamper-resistant (TR) receptacles.** These receptacles have spring-loaded shutters that close off the contact openings, or slots, of the receptacles. When a plug is inserted into the receptacle, both springs are compressed and the shutters then open, allowing for the metal prongs to make contact to create an electrical circuit. Because both springs must be compressed at the same time, the shutters do not open when a child attempts to insert an object into only one contact opening, and there is no contact with electricity. Tamper-resistant receptacles are an important next step to making the home a safer place for children.
- **In visible locations of the attic, we noted insulation in contact with some of the recessed lights.** Only recessed light fixtures rated and marked “Type IC” can be covered with insulation. The acronym “IC” means “insulation contact”. Insulation must be at least three inches away on all sides of non-Type IC rated recessed light housings in order to prevent overheating. Overheated lights are a potential fire hazard. Some newer models are equipped with automatic shutoff components if overheating occurs. Note: The use of LED bulbs in these fixtures may prevent overheating.
- **No grounding/bonding wires were readily visible on the metal water lines or gas lines.** Current code requires that all metal piping systems that are likely to become energized shall be bonded to the structure's electrical system in accordance with NFPA 70 National Electrical Code (NEC). We recommend this be evaluated by a licensed electrician and corrected as necessary.
- **We observed an exposed/unsupported AC control wire run at left rear exterior to the AC compressor.**

- **Outdoor kitchen outlets not operating at time of inspection**
- **Upstairs left rear bathroom left side counter outlet indicating open ground.**
- **Living room left rear outlet not operating.**

This house is equipped with ground fault circuit interrupters (GFCI) in recommended locations. The purpose of a GFCI circuit is to provide positive protection against a shock hazard since it will “trip” almost instantaneously, thus protecting you. Should a GFCI circuit interrupter “trip,” simply reset it for continuing operation. Periodically, you should test the GFCI circuit interrupter for proper operation. These circuit interrupters are more sensitive than normal circuit breakers and therefore provide far better protection for you in high-risk areas.

Note: The breakfast nook light fixture is equipped with LED bulbs that do not appear to be rated as dimmable. At the time of inspection, the lights flickered unless the dimmer switch was set to the brightest setting.

PLUMBING

General

A plumbing system consists of three major components, the supply piping, the waste or drain piping, and the fixtures. The distribution piping brings the water to the fixture from a private well or public water main, and the waste piping carries the water from the fixture to a private septic system or to a public sewer line. While some water was run down the drains, this cannot simulate the waste flows characteristic of full occupancy. There may be partial blockage of the sanitary drain lines from debris, broken pipes or tree roots that cannot be detected at the time of the inspection. Examination of such partial blockage is beyond the scope of this inspection.

The distribution piping is smaller diameter piping that operates under pressure. These pipes must be watertight. The drain or waste piping does not operate under pressure, instead typically uses gravity to drain the water from the fixture to the septic tank or sewer. Thus, these pipes must slope in order to work properly.

Observations and Recommendations

Where visible, the plumbing distribution piping in this home consists of copper piping. This system was in operating condition at the time of the inspection.

Water pressure was gauged at the exterior hose bib and found to be 50 psi. Acceptable pressure ranges are 40 to 80 psi.

All tested plumbing fixtures are in operating order.

The drain lines in this home are PVC piping. Where visible, this system was in good condition at the time of the inspection.

A 5-year-old gas fired water heater located in the 2nd floor attic and a 13-year-old, gas-fired water heater, located in the garage attic, provide domestic hot water and were in operation at the time of the inspection. According to the nameplate, each water heater has a capacity of 50 gallons. The capacity of the hot water system appears adequate for the normal needs of this size house.

Deficiency:

- **In general, water heaters can be expected to last about ten years. In our opinion, the 13-year-old water heater has reached the end of its expected useful life and should be replaced.**

A water heater is equipped with a pressure/temperature relief valve. Due to the likelihood this valve would not reseal if discharged, it was not tested. This is an important safety device that is required by most codes. Appropriate discharge piping is installed on this device to direct the discharge from any blow-off to a safe location.

Water heaters should be flushed every year or as recommended by the manufacturer to remove sediments that collect at the bottom of the tank. This is done by attaching a hose to the drain valve at the bottom of the heater, directing the discharge to a safe location and turning on the valve. When the water coming out of the hose turns clear then the process is complete.

The whirlpool bath was filled and tested during the inspection. A nominal check of the operating systems did not reveal any problems. However, due to the limitations inherent in a standard inspection, a full check of timer cycles, heating capability and certain other equipment, as applicable, was not conducted. There was no access to the mechanical equipment related to this whirlpool bath, therefore it could not be checked for proper installation.

The 6-zone underground lawn sprinkler system was operating at the time of inspection. It should be realized that no excavations or diggings were made as part of this inspection; therefore, no comment can be made on the condition of buried pipes. The timer was not tested. Sprinklers should not spray on the house; especially on windows and doors.

Note: This home is equipped with a water softener system and a mosquito spraying system. These systems were not tested for operability. We recommend that the seller demonstrate the operation and maintenance of these systems.

HEATING & AIR CONDITIONING

| | |
|---|--------------------------------------|
| Fuel | Natural Gas (heat) & Electric (cool) |
| Distribution | Forced Air |
| Zones (separate systems)..... | 3 |
| Capacity (cool zone 1, Upstairs)..... | 48,000 BTU/hr = 4 tons |
| Capacity (cool zone 2, Downstairs)..... | 48,000 BTU/hr = 4 tons |
| Capacity (cool zone 3, Master areas)..... | 48,000BTU/hr = 4 tons |

Observations and Recommendations

Split system air conditioners and gas furnaces provide heating and cooling for these premises. A split system air conditioning/heating system consists of two basic elements: The compressor/condensing unit, which is located outside, and the air handler/evaporator coil/gas furnace unit, which is located in the attic.

During the hot summer months, the compressor/condensing unit, in conjunction with the evaporator coil, removes heat from the house and rejects it to the outside. During the cooler winter months, the furnace heats the inside air. For both the heating and cooling processes, the air handler circulates air through the house.

The cooling systems were operating properly and delivering sufficiently conditioned air to the outlets at the time of the inspection.

The heating systems were operating properly and delivering sufficiently conditioned air to the outlets at the time of the inspection. The furnaces were operated, the burner flames looked normal and limit switches appeared to function properly. Please be aware that the heat exchanger (which is the central and most critical part of a hot air furnace) could only be viewed to a limited extent. Those areas that were visible appeared to be serviceable. You should understand that this is a very limited examination and not a conclusive evaluation of the heat exchanger. A conclusive evaluation can only be done either visually by at least a partial dismantling of the furnace or by a smoke test or other tests that would identify combustion products in the heated air.

In the cooling mode, this system, when operating properly, can produce approximately 12 tons of cooling. According to our calculations, this will be adequate for this size home.

It should be kept in mind that the average life of an outside air conditioner compressor/condenser is approximately 12 to 15 years. According to each unit's nameplate, the compressors are approximately: zone 1 unit – 12 years old, zone 2 ton unit – 2 years old and zone 3 unit – 12 years old. The average life of the air handler/evaporator coil/gas furnace units (in the attic) is approximately 15 to 20 years. According to the nameplates the evaporator coils on these units are approximately: zone 1 unit – 11 years old, zone 2 unit – 4 years old and zone 3 unit – 9 years old. According to the nameplate, the zone 1 furnace and air handler are also approximately 11 years old. We were unable to determine the age of the other furnaces and air handler components (no readily visible nameplates). It should be determined from the present owner the age of all components and if any system components have been recently repaired or replaced.

Our visual inspection of the air conditioning system does not check for proper refrigerant charge or test for leaks in the system. The evaporator coil needs cleaning and maintenance periodically. The coil should be cleaned, serviced and inspected if the owner's records do not indicate that this service has been performed within the last year.

This heating and cooling equipment should be cleaned, serviced and adjusted each year prior to the start of the heating and cooling seasons. This servicing should include the compressor, motor-blower units, filters, and any other component, including electrical controls and devices for starting and operating, etc.

The cleaning and/or changing of filters every 6 to 8 weeks in the heating and cooling seasons is strongly recommended. This will go a long way towards keeping the units running efficiently. Filters are usually located at the return air vents or inside the air handlers.

The ductwork used in this home is primarily the circular flexible type. This is by far the most common residential duct. This type of ductwork is subject to mechanical damage, premature deterioration, and kinking. Kinking of the ductwork will cause a reduction of airflow, reducing the performance of the heating/air-conditioning system.

Deficiencies:

- **We observed evidence of condensation damage to the ceiling drywall at the HVAC register above 2nd floor walkway.** Any source of moisture accumulation should be eliminated and the area observed for any evidence of mold growth or moisture related deterioration.

Deficiency:

- **In the 2nd floor attic, we observed old HVAC equipment left in the attic**

INTERIOR

General

As a responsible owner, you are best able to judge the condition of the interior finish of the rooms. In this section of the report, we are concerned with those things that are technically and financially significant. For example, stains which might indicate roof or plumbing leaks, older wall or ceiling material which may require repair/replacement; the use of substandard materials on interior walls or ceilings; or the quality and condition of such items as the doors, windows, and cabinetry are those things which can affect the overall quality and condition of a home.

Observations and Recommendations

Generally, the interior walls and ceilings of this home are finished with drywall and paint. The floors are finished with tile, wood and carpet.

The quality of materials used in this home is excellent. The interior condition of this home is above average.

In addition to general wear and tear, we observed the following deficiencies:

- **Hairline drywall cracks and/or evidence of drywall joint repairs noted in locations including: Dining room, master bedroom ceiling, family room ceiling.** In our opinion, these are cosmetic in nature.
- **Cracked floor tile in master bathroom**
- **Non-latching door: Downstairs hall closet**

As a general note, bathroom caulking should be inspected regularly and kept in good condition since water leaks can lead to other structural deterioration. Particularly important and often overlooked, is the joint between the tub and the floor.

A general operational check of the appliances indicated that they are in operating order, except:

Deficiency:

- **Outdoor kitchen refrigerator not operating at time of inspection (see Electrical section).**

All appliances and equipment that remain should be in operating condition when this property is taken over. Since the condition of this equipment can change unexpectedly, we suggest that you visit this home at least one more time before taking ownership to confirm that everything is operating properly. We have included a *Pre-Title Checklist* for your use during this final visit.

Security systems, central vacuum systems, and intercom systems are not tested as part of our standard home inspection.

SAFETY

Limitations

While some references to code compliance may be made, our report is not a code compliance investigation. Such an investigation is beyond the scope of this inspection.

Observations and Recommendations

Where visible, the living room and family room chimneys appear to be in good condition and structurally stable. You should be aware that our interior examination of the flue is very limited, and that a comprehensive examination can only be made by a qualified and fully equipped chimney sweep. From all evidence available, the chimney flues appears to be metal.

A limited investigation of the fireplaces was undertaken, and, to the extent visible, the fireplaces appeared to be in satisfactory condition. They are equipped with a flue dampers, which were operating properly. The fireplaces are equipped with gas burner systems which were operating at the time of inspection.

Deficiency:

- **The fireplace dampers are not equipped with a damper stops.** Any fireplace that is equipped with gas logs must have the damper set in a permanently open position to prevent accidental carbon monoxide poisoning. This can be easily accomplished with a damper stop that can be purchased at most hardware stores.

Deficiency:

- **Exterior doors are equipped with keyed dead bolt locks.** This type of lock can prevent exit in the case of an emergency if a key is not available. If dead bolt locks that can be opened without a key is not an alternative, keys should be strategically placed so that they are available for egress.

This home is equipped with smoke detectors. We recommend that you test them monthly for proper operation.

There is a security/fire alarm system in this home. Exactly how well this system is functioning and what areas it serves are not known at this time. We suggest that you spend some time with the current owner to further understand the operation of this system and, if possible, to obtain all manufacturer's literature. Also, keep in mind that most of these systems do require regular maintenance to assure proper and dependable operation.

The garage doors are equipped with electric garage door openers. They were operating at the time of the inspection. The reversing sensors were operating properly at the time of inspection. The openers should be tested regularly to be sure they stop or reverse when the doors strike an obstruction or when a person or object passes beneath them while closing.

ENERGY EFFICIENCY

General

In any home in this climate, the three most important areas for enabling optimum energy efficiency are conduction, solar heat gain, and infiltration gains and losses. Conduction (or direct heat gain or loss through the walls and ceiling) is primarily controlled by insulation. Infiltration loss or gain (drafts or air leakage) is controlled by caulking and weather stripping. Solar heat gain is controlled by the external shading of windows exposed to the sun or reflected sun.

Typically, the attic space in a home in Texas is the most important area for insulation. There should be at least six inches of insulation in the "floor" of an attic. For reasonable fuel conservation, however, ten to twelve inches of insulation is better and is the current code requirement.

Observations and Recommendations

Where visible, attic insulation consisted of loose fill insulation and essentially conforms to present R30 standards.

The presence of insulation within the walls could not be confirmed from visual evidence; however, it is likely that the walls are insulated with about 3 to 4 inches of fiberglass or rigid foam boards.

In addition to controlling conduction, infiltration losses and solar heat gains, the next most important area to assure maximum energy efficiency is the efficiency of your heating and cooling unit itself.

The newer heating and/or air-conditioning equipment in use in this home is considerably more efficient than the older equipment.

To be sure you are not wasting energy on the production of hot water, you should check the temperature of the hot water produced. If it is above 120 degrees, we recommend that you reduce it to that level to minimize your hot water energy requirements. To be most accurate, use a thermometer at the hot water faucet.

ENVIRONMENTAL SCAN

Limitations

While some references to hazardous materials may be made, our report is not a complete investigation for toxic wastes in the building or adjacent soils, hazardous materials, or public records affecting this property. Such an investigation would be much more costly and is beyond the scope of this inspection.

Observations and Recommendations

Mold is a growing concern. For some individuals, the presence of mold may aggravate certain respiratory conditions. And, for still a smaller group, may actually be toxic. Organizations like the Environmental Protection Agency (EPA) and the Centers for Disease Control (CDC) have not established any levels considered to be safe or unsafe for mold. This is not for lack of trying, it is a matter of complexity. If you find mold, it often can be removed effectively using a chlorine solution (e.g. diluted Clorox) and then monitoring the area to determine if it returns. Mold is usually the result of moisture. Controlling moisture penetrations will typically eliminate the opportunity for mold to survive. For more information about mold, you might want to consider visiting one or more of the following websites:

- www.iaqa.com
- www.epa.gov/iag/molds/index.html
- www.cdc.gov (search on mold)

No readily visible evidence of mold was noted during our inspection. However, some evidence of moisture accumulation was noted which could encourage the growth of mold. These areas should be monitored for mold growth and/or other moisture related deterioration.

A benefit of buying a home built after 1978 is the knowledge that the home is most probably free of asbestos containing materials, urea-formaldehyde, and lead in paint. However, this can only be confirmed by performing testing of the relevant building materials. We observed no visual evidence that would cause us to recommend these tests.

There is an increased concern about radon contamination from homebuyers. Radon is a hazardous substance that is released into the atmosphere as part of the natural decay of radioactive materials in

the earth's crust and, when inhaled over extended periods of time, can cause lung cancer. Average radon concentrations in homes in Southeast Texas rarely exceed EPA recommended action levels.

This house was apparently constructed and painted after 1977. Since Federal regulations governing the amount of lead used in paint went into effect then, it would suggest that the risk of lead paint in this house is minimal. This cannot be guaranteed, however, without specific analysis of the actual paint in this home.

In 1986, Federal law prohibited the use of leaded solder on pipes that carry drinking water. Since this home was constructed after 1986, any copper plumbing in this building is probably not joined with lead-based solder.

DETACHED STRUCTURES AND MISCELLANEOUS COMMENTS

The following are a few additional comments that may be of interest to you regarding this home:

The patio at the rear is stone tile that is in good condition.

The driveway and sidewalk are in good condition. Minor cracking was noted, typical of driveways and sidewalks in this area.

The outdoor grill was operable at the time of inspection.

SWIMMING POOLS and SPAS

It should be realized that no excavations or diggings were made as part of this inspection; therefore, no comment can be made on the condition of buried pipes or other portions of the system that were not visible. This should not be considered a certification of the pool.

The pool inspection was done from above the waterline to detect possible evidences of cracks or other structural problems within the pool.

The swimming pool consists of an in-ground concrete pool surrounded by a stone tile deck.

In addition, it has the following equipment:

- Pool lights, which were operating
- Pool sweep, which was operating
- Skimmer baskets and weir doors, which were functional
- Time clock(s), which were operational
- Automatic chlorinator which was not tested
- Water features which were operating

The swimming pool and its related equipment were in operation and appears to be in serviceable condition. .

The cartridge filter, pump and motor appear to be in operating order.

Deficiency:

- **One pump motor housing is corroded**

The pool plaster was visible during the inspection from above the water line and appears to be in good condition.

The water line tile appears to be in good condition.

It should be noted that while there is a fence surrounding the backyard there is no fence around the pool area itself. This allows for unwanted entry into the pool by individuals who need close supervision, especially small children. It is recommended that the gate(s) leading to the back yard be made self-closing and self-latching to prevent unwanted entry to the pool area.

CONCLUSION

In summary, we consider this home to be in good condition when compared to others of similar age and construction type. While there is work to do, most of it is maintenance related and, thus, is common for most homes.

There is no one way to build, renovate or remodel a home. As a result, you may encounter contractors whose opinions about the condition of this home will differ from ours. We cannot be responsible for any action you may take based on those opinions unless we have the opportunity to review the situation and examine the relevant conditions before any repairs and/or modifications are made.

This report has been prepared in strict confidence with you as our client. No reproduction or re-use of this report for the benefit of others is permitted without expressed written consent, except as may be required by Texas real estate regulation. Further, except as required by regulation, we will not release this report to anyone without your permission.




As noted, the inspection represented by this report focuses on the major systems in this home. While a spot check of things like electrical switches, outlets, appliances and other equipment was made, the condition of these things can change unexpectedly. Therefore, we recommend that you visit this home at least one more time before taking ownership to confirm that everything is in operating order. Enclosed is a pre-title checklist we have developed for your use during this final visit.

If you have any questions about this report or inspection, please feel free to call our engineer for clarification. There is no additional charge for a reasonable number of phone consultations. Should an additional visit to the home be necessary, however, an additional fee will be charged.

Thank you for the opportunity to be of assistance to you.

TEXAS - EPA Map of Radon Zones

The U.S. EPA and the U.S. Geological Survey have evaluated the radon potential in the U.S. and have developed this map to assist National, State, and local organizations to target their resources and to assist building code officials in deciding whether radon-resistant features are applicable in new construction. This map is not intended to be used to determine if a home in a given zone should be tested for radon. Homes with elevated levels of radon have been found in all three zones. All homes should be tested regardless of geographic location. The map assigns each of the 3,141 counties in the U.S. to one of three zones based on radon potential. Each zone designation reflects the average short-term radon measurement that can be expected to be measured in a building without the implementation of radon control methods. The radon zone designation of the highest priority is Zone 1.

-  **Zone 1** Highest Potential (greater than 4 pCi/L)
-  **Zone 2** Moderate Potential (from 2 to 4 pCi/L)
-  **Zone 3** Low Potential (less than 2 pCi/L)



Pre-Title Check Sheet

The attached report is intended to focus on the major engineering systems (structure, heating & cooling, plumbing and electric) in the building you are considering. While spot checks of many components (such as switches, outlets, fixtures, etc.) were made during the inspection and any significant deficiencies noted in this report, it is important to understand that the condition of these components can change at any time. Therefore, we highly recommend at least one more visit be made to these premises before taking title. This checklist is offered as a guide for that final visit.

Allow sufficient time to comfortably complete the list. Please note that not all of these items will apply to every building.

Property Address _____ Date Completed _____

_____ By _____

| | OK | Not OK | | OK | Not OK |
|-----------------------|-----------|-------------------|------------------------|-----------|-------------------|
| DISHWASHER | ___ | ___ | WINDOW LOCKS | ___ | ___ |
| GARBAGE DISPOSAL | ___ | ___ | LAWN SPRINKLER | ___ | ___ |
| KITCHEN STOVE | ___ | ___ | SWIMMING POOL EQUIP | ___ | ___ |
| REFRIGERATOR | ___ | ___ | SIDEWALKS | ___ | ___ |
| CLOTHES WASHER | ___ | ___ | DRIVEWAY | ___ | ___ |
| CLOTHES DRYER | ___ | ___ | SEPTIC/WASTE SYSTEM | ___ | ___ |
| WATER PUMP | ___ | ___ | AIR CONDITIONING | ___ | ___ |
| WATER HEATER | ___ | ___ | GARAGE DOOR OPENER | ___ | ___ |
| LIGHT FIXTURES | ___ | ___ | ELECTRICAL OUTLETS | ___ | ___ |
| PLUMBING FIXTURES | ___ | ___ | SUMP PUMP | ___ | ___ |
| FIREPLACE/STOVE | ___ | ___ | HEATING SYSTEM | ___ | ___ |
| BROKEN GLASS | ___ | ___ | SECURITY SYSTEM | ___ | ___ |
| LEAKS (WALL, CEILING) | ___ | ___ | TILE WORK IN BATH | ___ | ___ |
| ALL WINDOW SCREENS | | | DOOR LOCKS AND LATCHES | | |
| AVAILABLE | ___ | ___ | (ALL KEYS AVAILABLE) | ___ | ___ |

MISCELLANEOUS ITEMS AND NOTES _____

Often weeks and months pass between our initial inspection and your closing on the property. Your involvement in making this final inspection will help assure you of the home you deserve.

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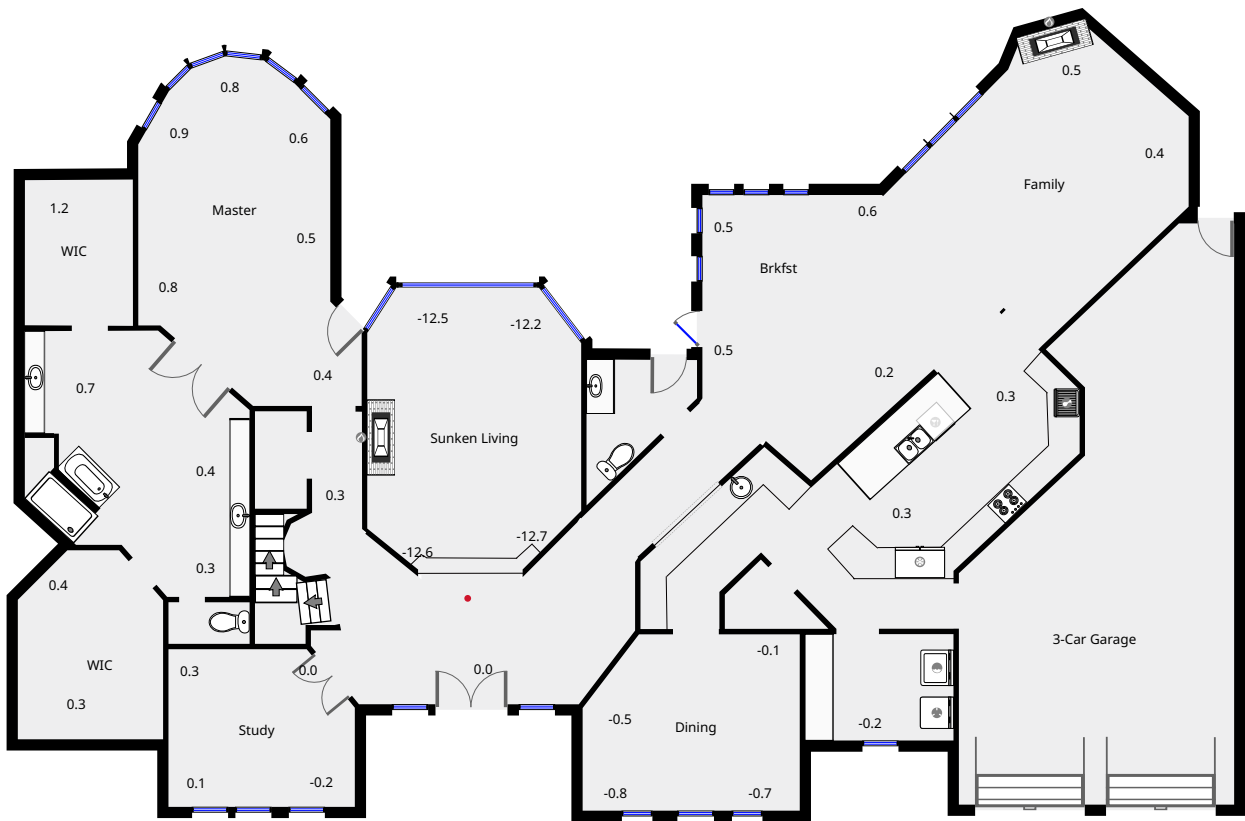
2020113S Full Home Blossom

4718 Melo Park Dr, Sugar Land, TX, USA 77479

Criterion- Farrell Yancy Engineers
www.criterion-yancy.com
(281) 491-1262



1st Floor



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Sugar Land, TX 77479

Photos taken by:
John Mulvahill, P.E.

Date:
May 7, 2020



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Description:
Front view of
home

Photo Number
1



Description:
Left side view of
home

Photo Number
2

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Date:
May 7, 2020



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Description:
Rear view of
home

Photo Number
3



Description:
Right rear view
of home

Photo Number
4

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Date:
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Description:
Right side view
of home

Photo Number
5



Description:
Slab crack at
front left side

Photo Number
6

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Sugar Land, TX 77479

Photos taken by:
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Date:
May 7, 2020



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Description:
Evidence of water damage on (rear) master closet ceiling

Photo Number
7



Description:
View of roof vent above master (rear) closet

Photo Number
8

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May 7, 2020



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Description:
Evidence of past water leakage and repair at living room fireplace chimney

Photo Number
9



Description:
Evidence of past water leakage at living room fireplace chimney

Photo Number
10

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Description:
Tree limbs in contact with roof surface at rear

Photo Number
11



Description:
Tree debris accumulation in gutters

Photo Number
12

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| | |
|---|--|
|  | <p>Description: Hairline stucco veneer crack on front right side</p> <p>Photo Number 13</p> |
|---|--|

| | |
|--|---|
|  | <p>Description: Hairline stucco veneer crack at front left side</p> <p>Photo Number 14</p> |
|--|---|

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Description:
Hairline stucco
veneer crack at
front left

Photo Number
15



Description:
Hairline stucco
veneer crack at
front entry

Photo Number
16

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Description:
Stucco veneer
crack at front
left of garage
door

Photo Number
17



Description:
Exterior light
bases missing
caulking to seal

Photo Number
18

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Description:

Mildew growth
on living room
chimney exterior
surfaces

Photo Number

19



Description:

Dining room
window pane
chipped

Photo Number

20

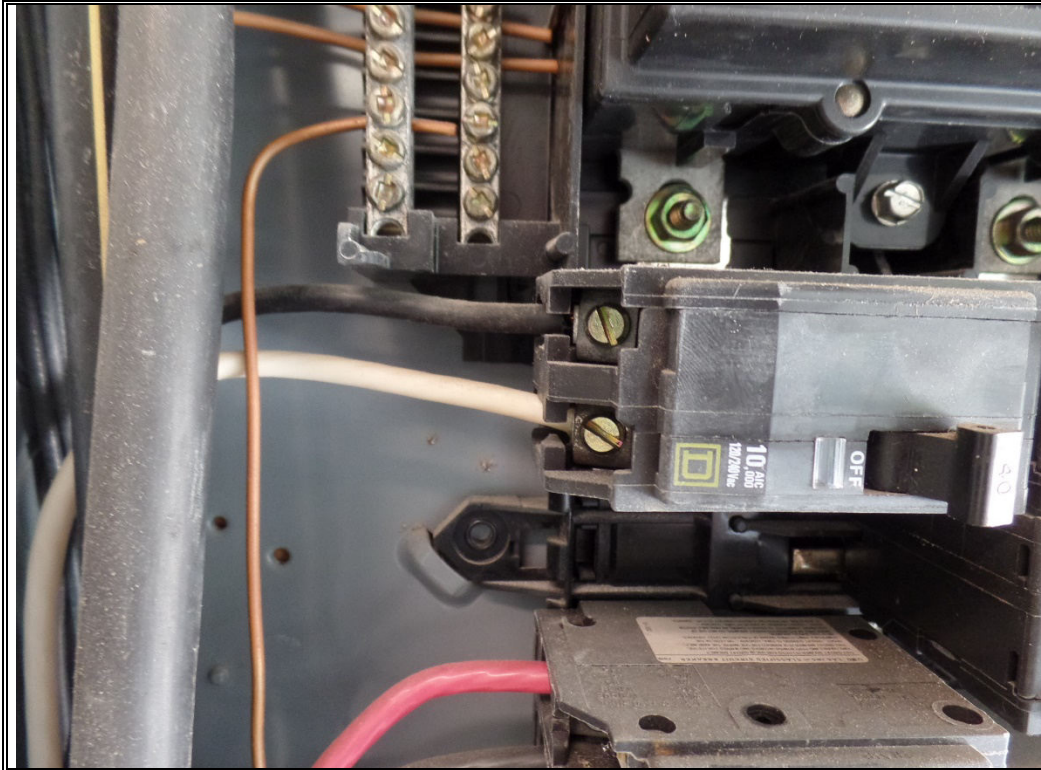
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Description:
White wires on
240V breakers
not marked
black to indicate
hot leg

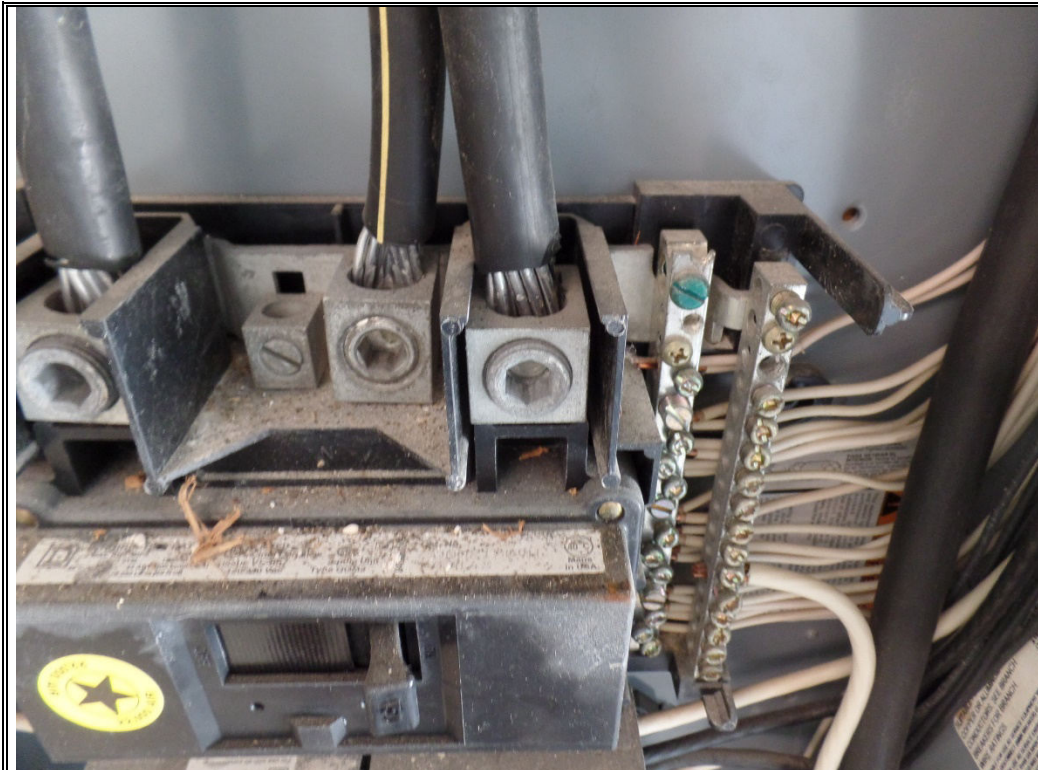
Photo Number
21



Description:
Service panel
ground rod
corroded

Photo Number
22

Full Home Inspection - Blossom



Description:
Aluminum service entrance wire connections in service panels missing anti-oxidant

Photo Number
23



Description:
Attic insulation in contact with Non IC type recessed lights (typical)

Photo Number
24

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Description:
Unsupported AC
wiring run at left
rear

Photo Number
25



Description:
Outdoor kitchen
outlets not
operating at
time of
inspection

Photo Number
26

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Description:
View of water heater in 2nd floor attic

Photo Number
27



Description:
View of water heater in garage attic

Photo Number
28

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Description:
View of water softener equipment

Photo Number
29



Description:
View of Downstairs zone AC compressor (front) and Upstairs zone AC compressor (rear)

Photo Number
30

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Description:
View of
Downstairs zone
HVAC unit

Photo Number
31



Description:
View of Upstairs
zone HVAC unit

Photo Number
32

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Description:
View of master
zone AC
compressor

Photo Number
33



Description:
View of Master
zone HVAC unit

Photo Number
34

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May 7, 2020



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Description:
Evidence of condensation damage at HVAC register above 2nd floor walkway

Photo Number
35



Description:
View of old HVAC equipment left in attic

Photo Number
36

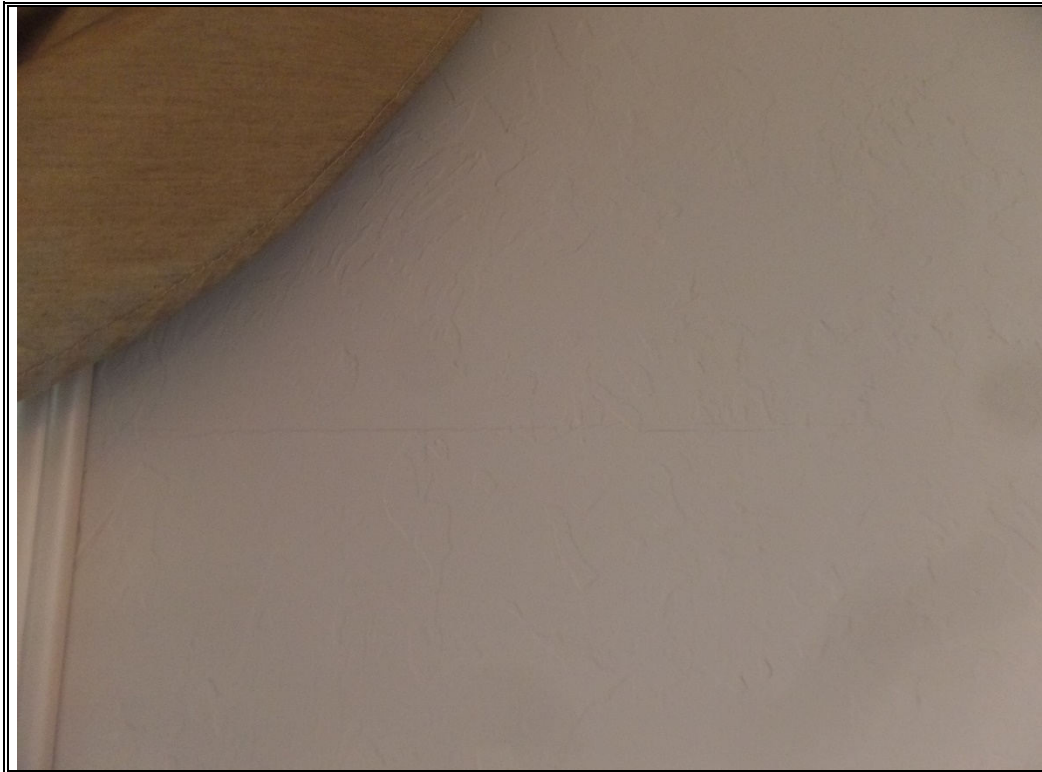
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Photos taken by:
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Date:
May 7, 2020



Full Home Inspection - Blossom



Description:
Hairline drywall
crack in dining
room

Photo Number
37



Description:
Hairline drywall
crack in master
bedroom ceiling
left

Photo Number
38

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Photos taken by:
John Mulvahill, P.E.

Date:
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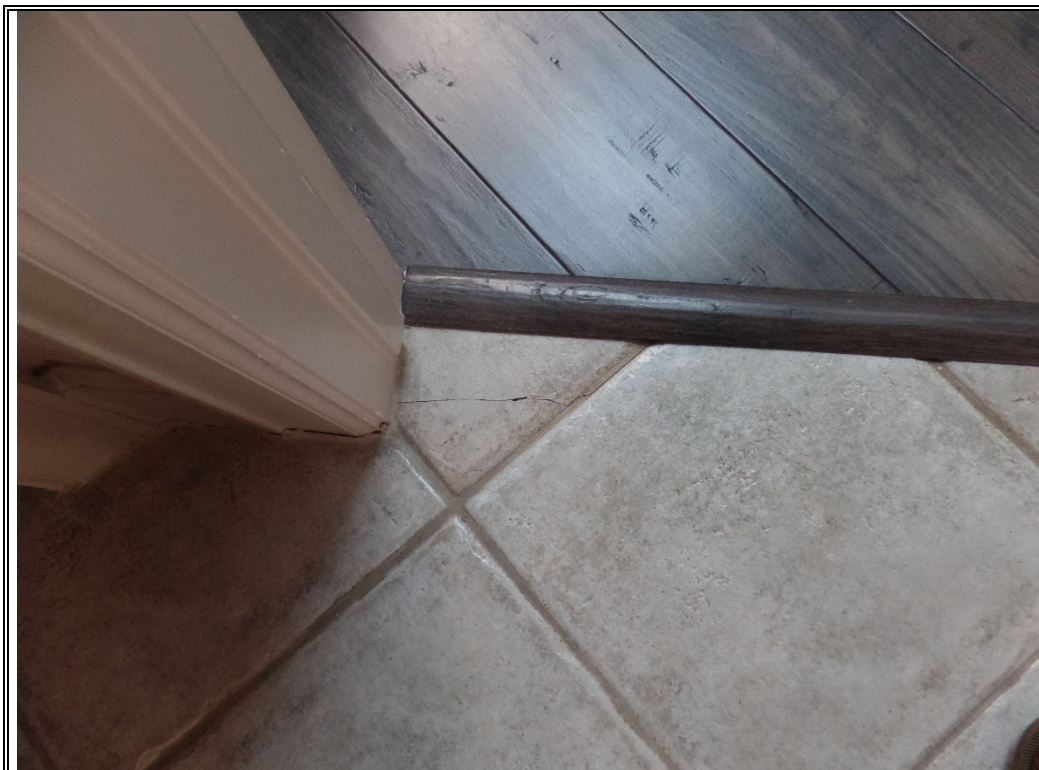


Full Home Inspection - Blossom



Description:
Hairline drywall
crack in master
bedroom ceiling
right

Photo Number
39



Description:
Floor tile crack in
master
bathroom

Photo Number
40

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Photos taken by:
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Date:
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Description:
View of pool
equipment

Photo Number
41



Description:
Pool pump
motor housing
corroded

Photo Number
42