### HOME INSPECTION REPORT

213 Main Street, Anytown, USA 17 September 2013



For: Johnny Homebuyer 123 Old Street Anytown, USA By: Marc LeBlanc, LHI 10291 Sherlock Inspection PO Box 70 Broussard, LA 70518 337 984-8882 (sales) 337 255-6815 (inspector, text only) www.sherlockinspection.com marc@sherlockinspection.com

### Introduction

This is my report of a visual inspection of 123 Main Street, Anytown, USA conducted on 17 September 2013. It and the photographs within it are the copyrighted material and intellectual property of Sherlock Home Inspection Service, LLC and the client named within it. No one is authorized to use, copy, resell or otherwise trade on this material under any circumstances without the permission of the client named within this report.

This inspection report meets the requirements of the Standards of Practice of the Louisiana State Board of Home Inspectors. All systems from §311 to §329 in the Standards of Practice have been inspected unless indicated otherwise in the contract.

Wherever I recommend repairs, you should have the work done by qualified, licensed contractors. You are advised to obtain quotes from qualified contractors for repairs recommended by this report. Home Inspectors are no more qualified than real estate agents to render estimates since the law does not permit them to complete repairs on houses that they have inspected.

I'm a home inspector, not a code inspector. Both are legally defined terms with little in common. Any building code cites that you see in this report are there because I consider all code books as sources of authoritative information, not because they're legally binding on the house inspected. Any question about the code compliance should be directed to the code enforcement authority having jurisdiction.

Thank you for selecting Sherlock to perform your home inspection. If you have any questions regarding the inspection report, please feel free to contact me.

Sincerely,

Marc LeBlanc Licensed Home Inspector #10291 Sherlock Inspection www.sherlockinspection.com marc@sherlockinspection.com 337 984-8882 sales (voice) 337 255-6815 Inspector (text only pls)

# **CONDITIONS & METHODS**

### **CONDITIONS**

The inspection began at 1 pm.

- ii) All utilities services were available.
- iii) The water pressure was measured at 52 psi.

iv) The skies were clear with outdoor temperatures in the high 80's and low 90's.

#### **METHODS**

The attics were inspected by crawling through their accessible areas. Areas with less than adequate headroom or lacking a solid deck path were inspected only from a distance. Obstructions such as ductwork, appliances and personal items may have obscured my view of some attic spaces and restricted my access.

ii) I inspected the roof only from the ground as it was too steep for me to safely mount.

iii) The furnace and AC's were checked for functionality only. I did not attempt to gauge their performance. Only the upstairs central heater did not function. v) Soil conditions were dry.

iv) The smoke alarms in this house may be tied into an alarm service. For this reason they were not tested.

### 1) Ask the builder to check the upstairs central heater.

iv) The garage door opener has a **safety reverse feature** that reverses the direction of the door if the electronic beam is interrupted while the door is closing. The feature was tested and did function properly.

v) The garage door opener was tested for the presence of a **pressure reverse feature** in which the presence of a closing obstruction will result in a reversal of the direction of door travel. This test was done with a 2X4 positioned flat on the floor in the path of the door. The feature functioned as described.

### **GROUNDS**

Run-off from the roof has already eroded the grounds next to the house to the point where flooding is necessary before the water is high enough to drain. Water that pools adjacent to the house weakens the soil which supports the foundation, increasing the stress upon it. Too much stress flexes it, cracks the brickwork and may eventually result in foundation failure.



2) Install a gutter/downspout system to carry rainwater away from the perimeter of the house

#### and avoid erosion.

### **STRUCTURAL**

Patches of parging on the foundation suggest a post-tensioned system is installed. This is one of several desirable construction features rarely seen on houses in this part of the state.



ii) Missed staples evince a stapled roof deck. Staples are but thin wires. They're the worse fastener you can use to secure the roof deck on a house that's in a hurricane-prone coastal area. After the first roof panel is lost, the attic becomes either pressurized or depressurize, depending on the wind direction, and additional panel failures follow like dominoes.



iii) A structural band behind the downstairs furnace that receives the top end of a series of rafters is sparsely fastened to the wall supporting it. I found very few nails in place. For a while, I wondered what held it there.



iv) The labels on the garage door give no indication of either a wind rating or an impact rating. Unrated garage doors are among the weakest of all components installed on homes. It faces south which is the direction most hurricane winds come from. A failure of the garage door under conditions of hurricane force winds could allow wind to pressurize the garage, resulting in the detachment of the ceiling/roof assembly from the walls. It could also result in failure of the ceiling drywall, pressurization of the lower attic space and failure of the roof structure over the kitchen and master bathroom.

3) Re-secure all roof panels to the framing during the next roof finish replacement interval in compliance with the Institute for Business and Home Safety recommendation at http://64.16.194.32/content/data/file/FFSL\_sta ndards.pdf (for 110 mph wind zones).

4) Nail the above referenced band to the wall behind it.

claimed to be 'hurricane rated'. That is not an accepted term but a guise to fool buyers.

5) Replace the existing garage door with product that is wind rated. Do not accept any product

### EXTERIOR FINISHES

One of two penetrations in the brick veneer is unsealed. Leaving an opening unsealed invites a water intrusion issue.



ii) The fiber-cement lap siding is very irregular in many places. Wide gaps between successive courses are present which suggest it isn't fastened properly. The problem is that this is a 110 mph wind zone. The gaps allow wind to catch it more easily and rip it off. The first defense against damage from water intrusion during a hurricane is exterior finishes that remain intact.



6) Seal all penetrations in the exterior wall finish.

7) Remove all fiber-cement lap siding and repeat the installation with new siding in compliance with the manufacturer's installation instructions as well as ICC Evaluation report #ESR-2290 (for 110 mph basic wind speed), a copy of which is attached to this report. ESR-2290 details the fastener requirements for hi-wind nailing as a function of wind speed and choice of fastener.

# **ATTIC**

The garage fold-down attic access ladder is not properly secured to the framing. The manufacturer provides nail openings on each hinge to facilitate installation.

8) Drive a fastener into each hinge nail opening on the garage fold-down attic access ladder. Do this only after properly shimming the hinge to framing.



### **DOORS**

The rear entrance door doesn't have any mechanisms to prevent opening momentum from damaging something. As currently installed, the hinges might be ripped out of the door and door frame if the door was forced to full open position.



ii) The rear entrance door is an outswing door which means the hinges are outside the house, not inside like most exterior doors. It's not a problem except that a would-be burglar could easily open such a door, even when locked, by removing the hinge pins. A safety hinge is installed but there's only one. There should be at least two, one at the top and one at the bottom. A safety hinge is an ordinary hinge with a set screw that locks the hinge pin in place and can be accessed only when the door is opened.



iii) The door knob on one particular door, I believe the garage entrance door, makes contact with the wall despite the presence of a door stop.

This doorstop is not effective in preventing the doorknob from damaging the wall behind it should someone swing it to full open position.



iv) The electronic beam and sensor for the garage door is installed too high. They should be installed between 4 and 6" from the floor. If they are installed too high, small children who lie in the path of a closing door for amusement might fit between the light beam and the floor, leaving them in danger of suffocation when the door comes down upon them. For more information, view document # 523 at the Consumer Products Safety Commission at

http://www.cpsc.gov/CPSCPUB/PUBS/523.pdf



v) None of the three deadbolts installed in the exterior entrance doors extend completely into the door frame. One does not lock at all.

vi) The doorknob on two of the three exterior entrance doors is loose.

vii) There is no door stop installed to prevent damage to the wall by the doorknob on the front exterior entrance door.

9) Ask a carpenter to install a door stop mechanism of some sort on the rear entrance door to limit door movement and avoid damage to it. An alternate solution is to install a chain/spring accessory, commonly used on storm doors, to limit door movement. 10) Ask a carpenter to install two safety hinges on the rear exterior entrance door, one at top and one at bottom.

11) Install an effective doorstop on the garage entrance door to prevent the doorknob from damaging the wall behind the door.

12) Lower the garage door electronic beam and sensor to between 4 and 6 inches above the garage floor.

13) A carpenter should service all three exterior entrance doors. Each deadbolt should extend fully into the door frame.

### **WINDOWS**

Many of the windows are difficult to open. It's not normal. Try opening a window on either side of the fireplace to experience what's normal. The window in the upstairs rear bedroom is so tight, I could not open it all the way and it's even more difficult to close it once open. Windows in a bedroom often function as an 'emergency means of egress' in the event of a fire and should be operable, even by children, from the inside of the house without the need for great effort, keys or tools.

14) A window installer should examine and correct all single-hung window installations.

# **INSULATION**

Some attic wall insulation is loose and has already begun slipping out of position. A small breach in the insulation envelope ruins the investment in a much larger insulated area.



ii) The space between the downstairs ceiling and the upstairs floor doesn't need to be insulated since both downstairs and upstairs interior spaces are conditioned but this space should indeed be insulated from the attic. In every observable location, it was not. The insulation in the upstairs walls stops at the bottom of the wall and the insulation on the attic floor doesn't rise to it. The gap between them constitutes a breach in the insulation envelope of the house. (photo next page)



15) Secure all attic wall insulation and eliminate all breaches in the insulation envelope.

# **INTERIOR WALL FINISHES**

The interior wall paint is very thin in many places. This is entirely a cosmetic issue.



ii) A kitchen base cabinet has an opening in it for an unused gas line. There's no escutcheon installed. Escutcheons are not just cosmetic. They separate the combustible materials within the wall from the conditioned interior spaces.





The water heater T&P safety relief valve drain and water pan drain lines terminate just outside the brick exterior wall finish. They should terminate only once they point downward to the earth. This is to reduce the chance that someone or something will plug them. (photo next page)



ii) The hot water flow in the master bathroom shower fluctuates considerably with the position of the hot water faucet in the tub. A person in the shower might find it uncomfortable when someone else opens the hot water faucet in the tub. It's an issue with pressure regulation. Some shower faucets automatically compensate for less than ideal pressure regulation but I'm not sure such a valve is installed in this shower. They're uncommon in this area.

16) A plumber should complete the two water heater drain lines so that they point downward.

17) A plumber should examine and correct the pressure regulation issue in the master bathroom.

# **ELECTRICAL**

A device box in front of downstairs gas furnace lies loose on the attic floor. Electrical boxes should always be secured. This is a common finding on older homes but not new construction.



ii) A recessed light fixture above the range hood did not illuminate. (photo at right)



iii) The button switch for the garage door opener is loose.

18) Secure the loose electrical box in front of the downstairs furnace.

19) Ask an electrician to examine the recessed light fixture above the range hood.

# HEATING, VENTILATION & AIR CONDITIONING

There's no solid working surface in front of the service side of each attic furnace/cooling coil. Each attic appliance should have one that measures at least 30 inches square. This space should be clear and unobstructed.

From the 2006 International Residential Code:

M1305.1.3 Appliances in attics. Attics containing appliances requiring access shall be provided with an opening and a clear and unobstructed passageway large enough to allow removal of the largest appliance, but not less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) long when measured along the centerline of the passageway from the opening to the appliance. The passageway shall have continuous solid flooring in accordance with Chapter 5 not less than 24 inches (610 mm) wide. A level service space at least 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present along all sides of the appliance where access is required. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm) by 762 mm), where such dimensions are large enough to allow removal of the largest appliance.



ii) The ceiling registers in two bedrooms are installed too close to the entrance door. This might result in uneven temperatures within the room since the air supply crosses only a small portion of the room before it exits out the door. It might also result in frequent short cycles of the HVAC system because the thermostat is too close to the registers. The registers should be further away from the entrance door and closer to the windows so as to cause the conditioned air to cross as much of the room as reasonably possible.



iii) There are many instances where flexible duct is crimped over a structural member, pipe or some other. This reduces the air flow through it and ruins the results of a 'D' calculation performed on the ductwork. The radius of a bend in flex duct should not be less than the diameter of the duct itself. For more information, visit

http://www.flexibleduct.org/images/ADC~IR5E .pdf



iv) Both air-return ducts are too small for the tonnage installed. The downstairs unit has an 18 inch round duct which is adequate for no more than 1.75. Four tons are installed. The upstairs AR duct measures 16 inches in diameter - good for 1.4 tons yet  $2\frac{1}{2}$  tons are installed. Single return air ducts should have a minimum cross sectional area of one square foot/ton. Undersized air-return ducts may result in iced up cooling coils during the cooling season because of inadequate air flow through the coil. When an iced coil defrosts, the melted ice often finds its way to the bottom of the air handler cabinet where it wets the insulation. This wet insulation will never insulate well again, even after it dries out, which results in condensation along the bottom of the air handler cabinet, corrosion and reduced cooling capacity. An undersized air-return duct also elevates air velocities in the duct. Above 600 feet/minute registers and grilles begin making more noise.

v) Several penetrations in each cooling coil cabinet are unsealed and allow conditioned air – and money – to escape into the attic. They provided this inspector with a welcomed respite from the attic heat but you should now seal them to conserved cooling capacity and energy loss.



20) Install a minimum 30 inch square solidly deck work surface on the service side of each attic installed appliance. Leave these work surfaces unobstructed by framing, plumbing pipes and tubing, electric cables, condensate lines, refrigerant line sets and air conditioning ducts.

21) Relocate the bedroom ceiling registers further away from the entrance door and closer to a window.

22) Re-route all attic ductwork to avoid sharp bends in flex duct. Provide a bending radius at least equal to the duct diameter.

23) Enlarge both return air ducts to at least 1 square foot of equivalent cross sectional area per ton of cooling installed.

24) Seal all penetrations and air leaks in the cooling coil cabinets.

### **APPLIANCES & CABINETRY**

The gas powered fireplace is a ventless type, which means that it does not have a flue (there is no chimney). While this may be safe if the appliance is functioning properly, certain types of failure could result in CO poisoning. CO is colorless and has no odor. The symptoms of carbon monoxide poisoning are often misdiagnosed as the flu and most carbon monoxide detectors do not provide adequate protection. The defenses are few and the consequences can be very serious.

ii) The left side of the laundry room wall cabinet is loose.

25) Permanently disable or remove this ventless gas powered appliance. An alternative is to replace it with a vented equivalent.

# **DESCRIPTIONS**

#### FOUNDATION & FRAMING

This is a wood framed house built upon a poured concrete footing, foundation and floor. The lower story is approximately at grade level.

ii) The 2<sup>nd</sup> story structural floor is constructed of TIJ joists, a type of engineered lumber.

iii) The front porch column is finish in what seems to be a stucco finish so I don't know what structural material is within it. Likewise, the rear porch columns are covered with fiber-cement planks but I suspected the structural component is sawn wood.

#### **INSULATION**

Loose fiberglass fill is used to insulate the attic space from the conditioned space below it. The attic walls are insulated with faced fiberglass batts.

ii) The average insulation depth on the attic floor seems between 8 and 10 inches. R-30 is a common standard here and that comes out to about 10  $\frac{3}{4}$  inches thick. The batts on the walls are about 6 inches thick though the stude are 2X4.

#### EXTERIOR FINISHES

The exterior walls are clad mostly with brick veneer and fiber-cement lap siding. Some 3-coat stucco is installed with XPS foam board used for door and window trim.

#### **ELECTRICAL SYSTEM**

The electrical service is 120/240 volt, single phase, 200 amp.

ii) Electrical power is distributed via type NM cables, commonly referred to in the trades as romex cable.

#### PLUMBING SYSTEM

iv) The ceiling/roof structure consists of individual wood members cut and joined together onsite.

v) The roof is decked with 7/16" APA (American Plywood Association) rated sheathing that has a radiant barrier on its underside. A radiant barrier is nice to have in cold climates where you want to reflect infrared heat back into the house. In this hot/humid climate we have here, we want to get rid of it. Builders sometimes forget that building science is climate specific.

The extra thickness represents an incorrect installation.

iii) There's no vapor barrier installed at the boundary between ceiling and attic. The State Board of Home Inspectors requires that I comment on this though I don't think it makes much of a difference in this hot/humid climate that we enjoy here.

ii) The cornice is finished with fiber-cement vented soffit and fiber-cement fascia.

iii) The roof covering is laminated strip (architectural) asphalt shingles.

iii) The circuit breaker panel/enclosure is installed within the garage.

The main fresh water, sanitary drain lines and gas lines, which bring services from the street to the house, are all buried so I don't know what materials they're made of.

ii) PVC is installed as drain/waste/vent lines.

iii) Fresh water is distributed through the house with PEX plastic tubing. The fittings are ProPEX plastic. Wall and floor stub-outs are in copper.

iv) The main water shut-off valve is located on the right side of the front yard.

v) Steel pipe is used to distribute natural gas.

vi) The main gas shutoff valve is located next to the pressure regulator on the right side of the house.

v) The water heater was manufactured by Rheem in February of 2013. Its natural gas powered and has model # 22V50F1, serial # RHLNQ 071333953. It has a 50 gallon water capacity and a rated input of 38,000 btu per hour. It's installed in the upstairs attic.

#### HEATING, VENTILATION & AIR CONDITIONING SYSTEM

Two independent, centrally ducted HVAC systems are installed for a total cooling capacity of 6.5 tons, about 78,000 btu/hr. Each HVAC appliance was manufactured by Carrier Corporation in either 2012 or 2013. Both furnaces are gas powered and the ACs are electric.

It's beyond the scope of this inspection for me to check for proper balance in the duct system by completing manual J and manual D calculations. These two calculations should be done during the design phase of the HVAC system by the contractor but my experience is that almost no one ever does them for residential applications. I don't know if they were done for this house.

**System #1:** 4 tons of cooling and 88,000 btu/hr of energy input. Serves all downstairs rooms except the half-bath.

i) Outdoor unit: Model # CA16NA036-A, serial # 0913E08370.

ii) Indoor unit: Model # 58PHA090-16, serial # 4912A17118. Installed in the lower attic and accessed via the garage attic-access ladder.

**System #2:** 2.5 tons of cooling and 44,000 btu/hr of energy input. Serves all upstairs rooms.

i) Outdoor unit: Model # CA16NA024-A, serial # 4812X71755.

ii) Indoor unit: Model # 80PJ05EAR01, serial # GE5D302F360560365. Installed in the upper attic.