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Engineer's Inspection Report
Re: 7210 Hollies Acres Dr. Salcha, AK

Inspected by: Timothy Henry, P.E. and Dave Mowery
Inspection date: August 21, 2020

Sellers: State of Alaska

This report was prepared for you after the onsite inspection of the subject property and as part of a pre-sale inspection. I encourage buyers to contact me with any questions or for clarification prior to the purchase. Based on Borough records this home was constructed in 1984. This home has been vacant for many years and none of the domestic plumbing systems were functional during time of this inspection. The following listed recommendations for correction are based on my opinion, code requirements and best building practices.

Recommended items for correction are as follows:

1. Install an appropriate sanitary seal for the 6" well casing. Install a new water supply line between the well and the crawlspace ensuring that it is carefully insulated and contains a self-regulating heat trace. Replace the water pump and make all corrections as needed to freeze damaged water pipes throughout the house to cure any leaks and restore full functionality to the water supply system.

2. Excavate and correct the shifted sewer line and cleanout riser pipe for the sewer main. There is a soil blockage on the line at the location of the cleanout and it's suspected that the line has frost heaved and a coupling has come apart.

3. Have the failed septic tank and leach field replaced by a Certified Installer according to the ADEC installation requirements for a 3 bedroom home. With solids observed in the second chamber of the septic tank baffle appears to be failed and the leach field was not absorbing adequately.

4. Replace the broken exterior hose bib with new.

5. At the electric service panel, install a fastener or lock on the panel cover lid of the large "double throw" electric switch located to the left of the meter panel as to limit access to live components.

6. Clean all of the moss off of each of the entryway landings and reconstruct as needed to replace all decayed wood.

7. Install snow breaks on each section of the metal roof to protect occupants from sliding snow and ice and to protect against further damage due to sliding snow. Install three rows of snow breaks. One shall be approximately 2 feet from the eave and the others shall be evenly space along the length of the roof. Snow breaks shall be installed to both sides of the roof as to ensure the snow loading is even on both sides of the truss.

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8. Repair the damaged sewer vents on the roof that have resulted from sliding snow. Replace the roof flashings with new as part of this work.

9. Refinish the heavily corroded metal roof panels adjacent to the furnace chimney as to help prevent further corrosion or replace this roofing panel with new.

10. The furnace chimney is starting to buckle at the interior liner at one of the joints. This is typically the first stage of failure of the pipe. Have a professional chimney installer replace this furnace chimney with new factory built chimney suitable for use with solid fuels and conforming to UL-103HT. The chimney must extend above the roof at least three feet and two feet above any area of the roof within ten feet of the termination of the chimney. Installation should also include factory built and appropriate rain cap, storm collar, and roof flashing. The new chimney flue shall not be smaller in area than that of the area of the connector from the appliance.

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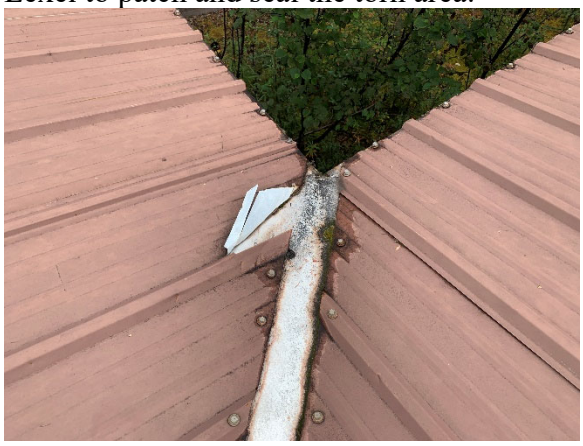
11. Repair the damaged metal roof at the valleys. Bend the sheet metal back into position and install additional screws to hold it in the future. Use a synthetic rubber caulking such as Lexel to patch and seal the torn area.



12. Patch and seal the damaged sections of metal roofing where there are tears. Seal from inside the roof using a synthetic rubber caulking such as Lexel.

13. Re-seal around the electric power mast roof flashing using a synthetic rubber caulking such as Lexel.

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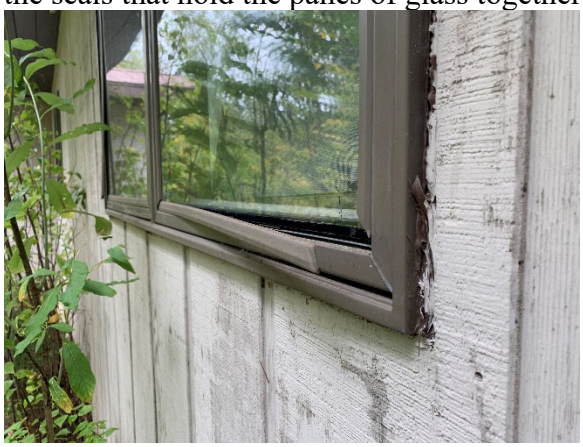
14. The foam insulation at the exterior of the foundation has frost heaved and is pushed the perimeter foundation flashing up. Excavate these areas adjacent to the foundation to reinstall the insulation and secure it to the foundation. Correct the perimeter metal flashing such that it is installed properly and drains moisture away from the siding.


15. There is decay along the bottom of the T1-11 siding at locations where the metal flashing is frost heaved up and holds moisture. After the flashing is corrected, cut off and open up the areas of decayed siding. Evaluate the framing behind the siding for decay and make repairs as needed. Patch the siding.

16. Repair all of the windows where the trim and glazing is coming apart. Several windows have the seals that hold the panes of glass together that are starting to fail and will need new glass.



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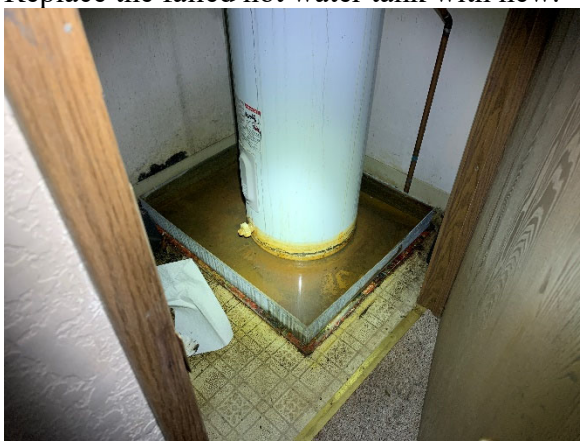
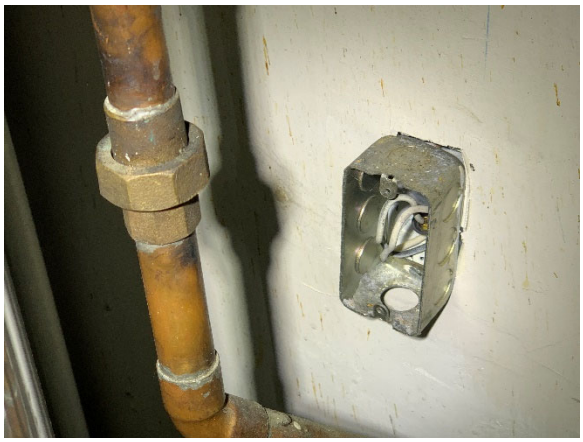
17. Replace the failed hot water tank with new.



18. Install the Romex at the hot water tank into metal flex or conduit.

19. Install a cover plate where missing on the open junction box located adjacent to the hot water heater.



20. There was a substantial amount of significant mold throughout the house. All areas of drywall with mold embedded in the drywall needs to be cut out and the drywall replaced. All other areas can be thoroughly cleaned and scrubbed and disinfected using a broad spectrum germicide disinfectant such as Concrobium.

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21. Cut out and replace the moisture damaged and swelled subfloor in front of the furnace room. The CDX plywood below seems to be fine but the fiberboard is severely moisture damaged and needs replaced.

22. Have the furnace fully cleaned, tuned and serviced by a licensed heating contractor. Make corrections as needed to the air distribution fan as it is rubbing substantially and may be bent or have failed bearings. The furnace to fired up and is functional but desperately needs to be tuned.

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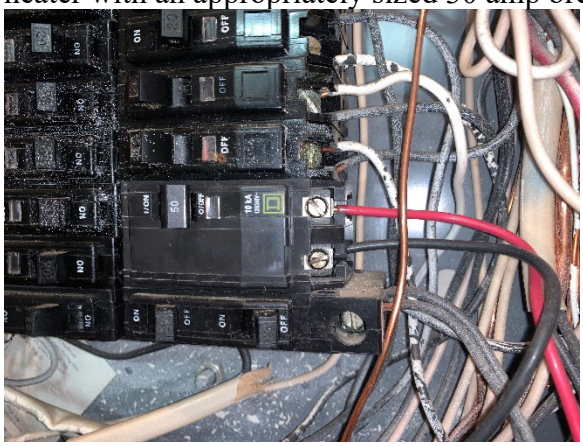
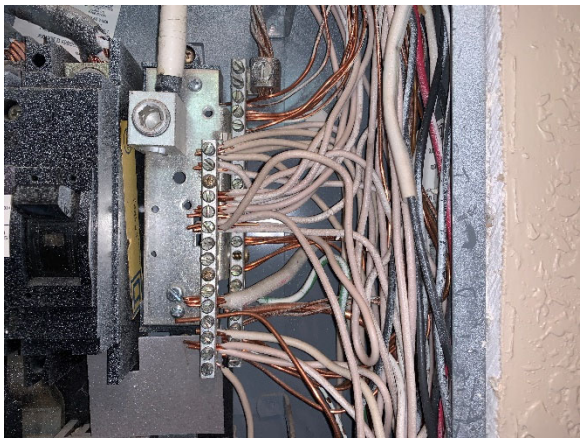
23. At the electric breaker panel, replace the 50 amp circuit breaker for the electric hot water heater with an appropriately sized 30 amp breaker.



24. At the electric breaker panel, separate all of the equipment grounding conductors off of the isolated neutral bus and bond them to the metal panel using a grounding bus.



25. Replace all smoke detectors with new ensuring there is one inside of each sleeping room and at least one in a central location of the main living space. Install a new carbon monoxide detector in a central location of the living space.

26. Replace the damaged and missing tiles at the shower surround or install sealed metal trim ring ensuring it's properly sealed as to prevent water infiltration.

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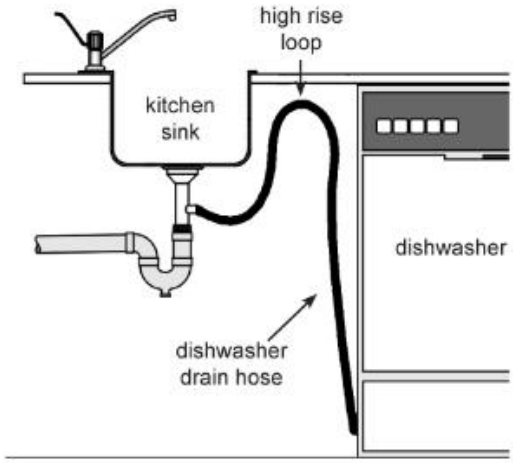
27. Repair the broken window operator mechanism at the southeast bedroom egress window.

28. Replace the dishwasher with new.

29. Install Ground Fault Circuit Interrupter (GFCI) protection for all kitchen receptacles that are installed to serve countertop surfaces as required per code. *Reference: NEC 210.8(A)*

30. Run the drain line from the dishwasher through an air gap device located above the sink or secure the line as high as possible (preferably the bottom of the counter top) before connecting it to the garbage disposal or sink drain so the opportunity for cross contamination is minimized.



31. In the crawl space, install a 50 CFM bath exhaust fan that vents to the exterior on one side of the crawlspace and install a 4" passive air duct on the other far end of the crawlspace as to allow for ventilation to thoroughly dry out and reduce condensation. Have the fan configured on a humidistat switch so that it will automatically activate when the relative humidity increases above approximately 30%.

32. In the crawl space, replace the heavily corroded sections of heat ducting.

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33. In the crawl space, re-seal the loose joints of the heat ducting.

34. In the crawl space, clean up and remove all of the broken glass from the light bulbs and trash throughout.

35. In the crawl space, replace all heavily corroded electric receptacles, switches and junction boxes with new.

36. In the crawlspace, thoroughly dry out the area using heaters then treat the entire crawl space to include the foundation and all of the framing for mold using a broad spectrum germicide disinfectant such as Concrobium. Apply at least two heavy applications of this throughout the entire crawl space.

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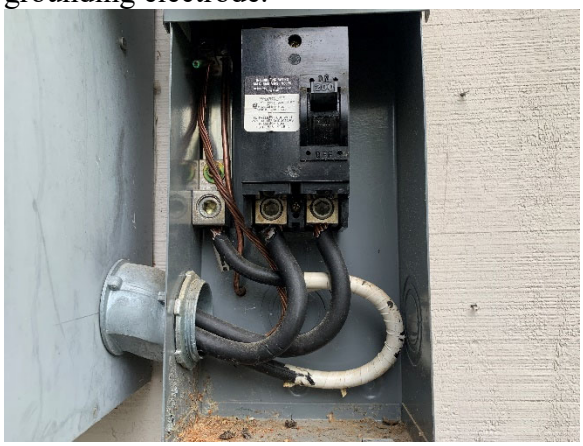
The following is general information and suggestions for future use.

a. It should be noted that this home according to the borough is not located within a fire service area. This can have an effect on obtaining fire insurance.

b. The electric service panel was evaluated and found to be NEC compliant with appropriately sized copper conductors for the 100 amp service. The electric feed contains a dedicated equipment grounding conductor and the panel appears to be properly grounded to a grounding electrode.



c. All of the metal roofing screws were found to be tight and overall, the metal roof was found to be in acceptable condition. After repairs are complete it is my opinion that this roof will serve well for many more years.

d. The roof framing consists of Engineered trusses and are considered sufficient for the Fairbanks snow load. Under normal conditions shoveling the roof will not be necessary. Attic insulation was measured around 8 inches thick and consists of fiberglass bats. For increased energy efficiency, consider adding an additional 6 inches or more of blown fiberglass or cellulose taking care not to block the eave vents.

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e. Because the home has been vacant for so long it may be necessary to have the fuel in the fuel tank cleaned and separated for water. There was likely a lot of moisture condensation that develops in this tank over the many years that it has gone unused.

f. The cosmetic damages throughout the house are significant due to this home being vacant for so long and the condensation and excess moisture that resulted. Buyers should be aware.

g. There appears to be a layer of fine crushed rock over top of the plastic vapor barrier in the crawlspace. The vapor barrier does seem to be continuous but moisture was extremely high down there due to the home being vacant and no ventilation.


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h. The foundation consists of concrete strip footings with concrete block stem wall that appear to be continuously grout filled. No signs of cracks or movement was observed on the foundation.

This inspection was limited to the portions of the building that were evident and readily accessible during the inspection. The comments within are based on that which was observed during the time of inspection. This report may not address every concern that you or another Engineer deem applicable. It does not address potential environmental hazards such as leaked fuel or potentially environmentally hazardous building materials. I encourage buyers to utilize the professional assessments of trade specialists such as service technicians or environmental testing specialists as needed to further evaluate any additional aspects of this property within their discovery period if so desired. Please feel free to contact me with any questions or concerns.

Sincerely,

Timothy Henry, P.E.

August 21, 2020

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