Summer Session of the 25th Navajo Nation Council
July 17, 2023

Report on the Navajo Nation Washington Embassy – 11 D Property
Provided by Justin Ahasteen, Executive Director, Navajo Nation Washington Office

Madame Speaker and Honorable Members of 25th Navajo Nation Council, thank you for welcoming the Navajo Nation Washington Office to discuss the concerns and recommendations regarding the physical state of the Navajo Nation Washington Embassy also known as the 11 D Property. The urgency of this matter warrants immediate attention to ensure the safety and structural integrity of this significant property.

To provide some historical background, the Navajo Nation Washington Embassy was acquired during the Nez-Lizer administration and approved by the 24th Navajo Nation Council through legislation CJA-07-21. This legislation approved an expenditure of $4.8 million dollars from the Land Acquisition Trust Fund to purchase the property located on 11 D Street SE Washington DC.

Former Executive Director of the Navajo Nation Washington Office, Santee Lewis, sent a memo to former Executive Director of the Navajo Division of Natural Resources, Rudy Shebala, in June of 2020 recommending the real estate purchase of 11 D St SE indicating that the property would provide rent savings and be a potential investment to the Navajo Nation, improve accessibility to the United States Congress, and highlighted that the current office space was unusable due to a flood that occurred in May of 2020.

After months of gathering administrative documents to complete the purchase of this property, an agreement was executed between the Navajo Nation and Stephen Tanner and Sophia Mellos in February of 2021. Upon review of the supporting documents provided in legislation as well has hard copies within the Navajo Nation Washington Office, it was discovered that the property was secured without a building inspection report.

For this discussion, it is important to identify the difference between an appraisal and an inspection. An appraisal is typically conducted during a real estate transaction when a property's value needs to be determined. It is usually performed by a licensed appraiser who assesses the property's market value based on various factors such as location, size, condition, comparable property sales, and current market trends. The primary purpose of an appraisal is to provide an unbiased estimate of the property's worth, which helps lenders, buyers, and sellers make informed decisions. The appraiser provides a detailed appraisal report with an opinion of value. An inspection report, on the other hand, is conducted by a qualified home inspector to evaluate the overall condition of a property. It is typically requested by a buyer before purchasing a home to identify any potential issues or defects. During an inspection, the inspector thoroughly examines the property, including its structural components, electrical systems, plumbing, HVAC systems, roofing, and other areas. The inspection report details the inspector's findings, including any observed defects, safety concerns, or maintenance issues. The purpose of an inspection report is to provide the buyer with a comprehensive understanding of the property's condition, allowing them to make an informed decision about the purchase. An inspection can potentially affect the appraisal value of a property in several ways:

1. Identification of Defects: During an inspection, the inspector may uncover defects or problems with the property that were not previously known or considered. These could include issues with the structure, electrical systems, plumbing, HVAC systems, or other components. If significant defects are found that affect the property's functionality, safety, or habitability, it can impact the appraisal value negatively.

2. Property Condition: The inspection report provides an assessment of the property's overall condition, including its age, maintenance, and general upkeep. If the property is found to be in poor condition or in need of significant repairs or updates, it could result in a lower appraisal value. Appraisers take into account the condition of the property when determining its worth.

3. Comparable Sales: Appraisers rely on comparable sales data to determine the value of a property. If the inspection reveals that the property being appraised is in better condition or has more desirable features than the comparable sales used for valuation, it could potentially lead to a higher appraisal value. Conversely, if the inspection reveals that the property is in worse condition or lacks certain features compared to the comparables, it could result in a lower appraisal value.

4. Safety and Compliance: Inspections often assess whether a property meets safety standards and complies with building codes and regulations. If the inspection identifies safety hazards or code violations, it may impact the appraisal value. Appraisers consider the safety and compliance aspects of a property as they evaluate its worth.

It's important to note that while an inspection can provide valuable information that may influence the appraisal value, the final appraisal is conducted by a licensed appraiser who follows specific guidelines and considers various factors beyond the inspection report. The appraiser also takes into account market conditions, location, size, and other relevant aspects when determining the property's value. However, as a process of due diligence and to identify deficiencies, an inspection report is always recommended during real estate transaction.

Additionally, in April of 2022, concerns were made by staff regarding the integrity of the building and a directive from former President Nez was made to obtain a home inspection. On May 31, 2022 a home inspection was completed by a certified home inspector from District Home Pro and is included as Enclosure (1). The results of these inspections are as follows:

1. Visibly compromised roof structure

    a. The primary king beam has broken and has no visible support under its eastern end. Significant sagging and ponding are visible on the roof covering material at the location. Replacement of that material may be necessary as part of the repairs.

2. Deteriorated siding and sheathing

    a. Remove the deteriorated cedar shingles from the west, south, and east sides of the home, replace any deteriorated sheathing, install a water-resistant exterior barrier (for example Tyvek), install new siding, and seal all of the gaps around any remaining penetrations and between siding materials.

3. Incorrectly wired outlets

    a. Have an electrician correctly wire the fixtures within the home and to ensure they do not contain outdated wiring that has been outlawed.

    b. Failure to correct will violate fire code.

4. Chimney Deterioration in the attic

a. Consult a CSIA-certified chimney repair contractor for evaluation of the flue and to repair the deteriorated chimney mortar and bricks in the attic before use of the chimney. Use of the current flue and chimney is a fire hazard.

b. Failure to correct will violate fire code.

5. Damaged and corroded boiler

    a. The boiler must be replaced, failure to do so may cause significant damage.

6. Incorrect HVAC System Temperature Differential

    a. Repair or replace the one-piece HVAC system that created an incorrect temperature differential. Although the system went through start up procedures and the blower ran, the temperature of the supply air measured at the registers not within operational norms. A functional HVAC system will create a difference between the temperature of the air where is enters the return duct and the temperature of the air where is exiting the supply ducts. That differential should be at least 14 degrees.

7. Incorrect ductless heat pump temperature differential

    a. Replace the ductless heat pump that is not creating the appropriate temperature differential. Although the heat pump went through start up procedures and the blower ran, the temperature of the supply air measured at the registers not within operational norms. A heat pump system is normally considered functional when the operation creates a difference between the temperature of the air where is enters the return duct and the temperature of the air where is exiting the supply ducts and that differential should be at least 14 degrees and should not exceed 22 degrees.

8. Systemic Insulation and Ventilation Evaluation Needed

    a. Unconditioned Spaces Within the Thermal Envelope, Incorrectly Attached Soil Gas Barrier, Poorly Installed Insulation, Excessive Mold Smell, Inaccessible Portions of the Crawlspace Consult a highly qualified insulation contractor, mold contractor, or energy auditor to engage in an exhaustive evaluation and repair of the insulation and ventilation system, as well as the finished surfaces and structural components that may have been damaged due to an excessive build-up of condensation or mold growth. The quality of workmanship, the condition the components, and installation of the equipment shows significant signs of the systemic adoption of nonstandard building practices that often manifest in unseen problems which cannot be predicted by a visual inspection.

    b. Failure to correct will contribute to mold growth and violate workplace safety standards.

9. Exterior drainage routed through an interior crawlspace

    a. Evaluate the landscaping drainage the appears to have be routed through an inaccessible crawlspace under the ground level addition.

    b. Failure to correct will contribute to mold growth, insect penetration, and foundational

shifting.

10. Missing Attic Dehumidification system

    a. Health hazard as mold growth continues. Ventilation and dehumidification are **critical functions** to prevent airborne pathogens and illnesses.

    b. Failure to correct will contribute to mold growth and violate workplace safety standards.

11. Systemic Structural Evaluation

    a. Have a structural engineer engage in an exhaustive and invasive evaluation of the structure, construction, materials, and related systems.

12. Excessive foundation movement

    a. The beam used to correct previous foundation movement for wall reinforcement is severely damaged and foundation movement continues. After review there appears to be no footers and insufficient repairs have been made in the past.

    b. Failure to correct will cause structural failure.

13. Atypical supplemental structural support design

    a. Repairs are needed to support joist in the basement for damaged caused by wood destroying organisms. supports appear to have been inappropriately and ineffectively been installed with no ability to bear or transfer any structural weight to any footer or solid surface. It appears as though they generally rest on subsiding bare soil, are not attached to the joists they are meant to supplement, have been inadequately placed to bear weight indirectly, and are bending at critical junctures. The terrazzo flooring about these modifications appears to suffer from rapid degradation. The upper levels of the home have similar symptoms, which may suggest that there is extensive termite damage that has not been repaired.

14. Traces of asbestos have been found in the roof and attics

    a. Must have an accredited asbestos professional remove asbestos fiber per the EPA.

    b. Failure to correct is a violation of workplace safety laws.

The home inspection result overall found 16 items that needed normal maintenance, 47 items that needed to be addressed after occupying, and 15 immediate items that needed to be addressed prior to occupying. In accordance with the recommendations by District Home Pro, since taking over as the Executive Director, the Navajo Nation Washington Office obtained another inspection by a certified structural engineer (Enclosure 2) from Woods and Peacock. Their assessment identifies the following:

1. The initial survey and analysis of the property revealed several alarming structural issues. Notably, the east-west timber roof girder is split, and its west end bearing is side-nailed to vertical wood studs, resulting in a significant loss of structural capacity. Additionally, the northern roof girder may not be fully bearing on the existing brick wall due to partially rotated loose bricks. These

findings necessitate further surveying, analysis, and repair of the roof framing to determine and restore the existing roof capacity.

2. The report also identified issues with the structure's joists. They were notched irregularly to accommodate plumbing fixtures, leading to a higher than typical dead load on the ceiling due to four layers of gypsum board. This situation could severely impact the floor capacity of all existing joists. Remedial actions should include analyzing and reinforcing the existing notched wood joist framing to provide adequate strength and support for the required loads.

3. In the basement, the connection between the double header and double joists appears inadequate, and the double joists are not sistered together along their length. The same deficiency extends to the crawl space, where supplemental framing exhibits numerous deficiencies. Therefore, it is recommended that the floor framing be analyzed to verify its capacity to support commercial floor loading, with additional reinforcement as needed.

4. The basement foundation also shows substantial deterioration, particularly in the parging and mortar. Waterproofing the below-grade foundation wall and/or damp proofing the brick bearing wall could address this issue. However, the exterior east wall presents more severe problems. It is bowing outwards both horizontally and vertically, necessitating further evaluation and possibly destructive analysis.

5. The crawl space framing has significant deficiencies in the framing, connections, bracing, and support elements. The framing sections do not appear to be appropriately sized and improperly installed. The recommendation for this fix requires a complete reframe and modification to the foundation in order to be incompliance with the appropriate building codes for the District of Colombia.

6. Moreover, there is apparent water staining along the east wall, suggesting a rising damp issue. Similarly, the east wall's mortar has debonded from the existing brick, with gaps and voids in the bed joints being significant. A comprehensive approach for the restoration of the bearing walls, including a mortar analysis, is therefore recommended.

7. Lastly, the bricks above the entry doorway and windows show signs of movement. Deterioration and cracking in the bed and head joints are also visible. Monitors should be installed to determine the extent of movement, and steps should be taken to reinforce the existing arching and stitch the cracking joints together.

Based on these factors, the structural engineer has advised against occupying the property, deeming the property in a verbal report as uninhabitable, until a more comprehensive survey, analysis, and repairs are completed. Additionally, commercial occupancy cannot be considered until the existing floor framing throughout the building has been brought up to code.

Furthermore, it was warned that any additional weight added to the roof in its current state from water accumulation can result in the collapse of the roof inward. There are already signs of this happening within the property exacerbated by a pipe that has ruptured causing significant ceiling damage. On April 29, 2023 a water line burst in the building causing the ceiling to collapse in two places and causing additional damage to the interior walls. Insurance Risk Management was immediately notified, and they sent a water mitigation team to the building. President Nygren and Chief of Staff Sandoval were also notified. NNWO was given special authorization to utilize our Operational P-Card to address the flooding.

A claim was submitted to the Insurance Risk Management Department however, our claim was denied. The reason for denial as provided by a memo from Insurance Risk Management Dated May 17, 2023 indicates that *the Navajo Nation Property Policy does not cover loss or damage to: a. Vacant/Unoccupied Premises: permission is given to cease operations, or for the premises to be vacant or unoccupied for sixty (60) consecutive days and for more than sixty (60) consecutive days. In the event your office failed to comply with the foregoing, all coverage otherwise provided under this policy is null and void as such locations.*

Currently, we do not have precise information regarding the cost of repairs for the entire building as it requires a more in-depth and comprehensive analysis. Nevertheless, after consulting with both the home inspector and structural engineer, it has become evident that the expenses involved in rectifying the issues will be significant.

Recommendation:

In light of the current state of the Navajo Nation Washington Embassy and the presence of various unknown factors, it is imperative and highly recommended that we initiate the process of identifying a reputable real estate broker to expedite the sale of the 11 D Property. The associated risks and costs are unacceptably high, with no guarantee of a favorable return on investment. Furthermore, it is crucial to note that the lease for the Navajo Nation Washington Office is set to expire in September of this year.

To address these circumstances proactively, I have already initiated preliminary negotiations with a highly competent real estate broker. This broker has expressed utmost confidence in their ability to secure a larger office space within our current building, requiring minimal to no out-of-pocket expenses for renovations. The strategy involves collaborating closely with the landlord to obtain tenant upgrade credits, which will be determined based on the lease term. Notably, opting for a longer lease term will result in higher credit amounts.

This presents a unique and compelling opportunity to transform our office space into more than just a conventional workspace. By leveraging this chance, we can establish a comprehensive resource center that caters to the needs of the Navajo people residing in the Washington, D.C. area, offering a wide range of valuable services. Nonetheless, it is crucial to exercise due diligence and carefully evaluate all options and potential consequences before reaching any conclusive decisions.

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BUYER'S INSPECTION

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Navajo Nation Washington Office
MAY 21, 2022

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Anxiety is normal during home inspections.

You've already been inundated with disclosures and documents and checklists and conversations, and now you have this report with all of its pictures and descriptions and recommendations. Please do your best to keep things in perspective.

All homes have problems, and all problems have solutions.

Your inspection report is mostly information about the materials from which your house is made, the style in which your systems were installed, as well as estimates of the life expectancy for the home's various systems and components. I provide this information so that you can answer questions when you're applying for homeowner's insurance and so that you can speak intelligently with contractors when you contemplate repairs.

The rest of this report is the solutions I recommend to improve the safety, functionality, and maintenance of components at your new home. Solutions which I recommend will resolve issues that fall into one of three categories:

1. **Red**--Major defects or safety hazards;
2. **Orange**--Recommendations for developing problems or installation flaws; and
3. **Blue**--Normal, preventative maintenance.

You can view these categories as degrees of intensity or orders of importance, but do not look at any of these categories as signs of the failure of a home. I do not "pass" or "fail" homes.

I identify maintenance needs, all of which can normally be repaired or mitigated.

Sellers are under no obligation to repair things mentioned in this report unless they agree to do so during negotiations. Most sellers are honest and are often surprised to learn their homes might need improvement, but when you've bought this home, all of those things that need improvement will belong to you.

Pay special attention to the solutions that I recommend both for your health and for the safety and longevity of your home. Investigate the problems I identify and consider making changes, **even if these changes are NOT something which the seller thinks needs to be done or for which the seller is willing to pay.** Making these changes--regardless of who "should" bear the responsibility for them--will help your home reach a point where your only concern is home maintenance.

And that is what really matters in a home inspection: turning vague worries into an ongoing concern for routine maintenance based in concrete understanding and achievable homeownership tasks. That kind of concern is not un-warranted anxiety—that kind of concern is what makes you a responsible homeowner.

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1: INSPECTION DETAILS

Information

Things You Need to Know About Inspecting

Today's inspection was for your benefit only, and you are the owner of my observations and the Report.

Although I will deliver and discuss them with your agent, I won't discuss my observations or the Report with anyone else unless you or your agent tell me to do so. You should carefully consider whether you want to release this report or any information to other people, including the seller's agent.

I am not a scientist, code-inspector, contractor, or another expert. I am a generalist, and if you have questions about my findings or want to make repairs based on my suggestions, you should consult an expert before you begin. This Report is not a warranty. Even if I suggest a specific repair, I am not a contractor, and I don't work with contractors, so I don't guarantee the effectiveness or costs of repairs. Repairs may reveal defects I couldn't see during the inspection, which may increase the cost of repairs.

Conditions at the property can change between when inspected and when you close on the home. Drains that had worked may stop working. Appliances that had been functional may stop functioning correctly. Many people walk in and out of houses before closing.

It is in your best interest to conduct a final walk-thru at the property shortly before you close to double-check the condition of all of the appliances, equipment, and components. That means you should run and test what you can and look for new problems.

Details of the Property: Building Type
Single-Family, Detached, Row House

Details of the Property: Construction Period
Historic, Additions

The Day of the Inspection: Buyer's Presence
Inspector Only, Buyer's Representative

The Day of the Inspection: Occupancy
Vacant

Limitations

Your Inspection and Your Report

WHAT I COULD SEE DURING YOUR INSPECTION

During the inspection that I performed for you, I attempted to identify flaws and defects that have impacted the performance of home systems and equipment at the property, as well as adverse conditions that will have impacted the life span of the home's parts.

My inspection, however, was a limited visual inspection, and you need to realize that this means there are things I can't see—simply because a lot of the building is behind other stuff!

In several locations through-out the report, you will notice that I identify the sorts of finishes, obstructions, recent repairs and environmental conditions which restricted visibility on both the interior and exterior of the property.

Since the inspection was non-invasive, I did not remove finishes or move stored items, and I didn't turn on supply lines, dismantle equipment, do anything that might have damaged materials at the property, or risked my well-being.

I also cannot see through time. The purpose of a home inspection is not a prediction of future defects. Although I may discuss the likelihood of problems that could develop, I don't know for sure that they will or will not. I also don't know that other problems won't develop, even immediately after the inspection of a system!

All I will tell you is what I saw on the day that I inspected, everything else is up to time and physics.

Details of the Property

FINISHES AND REPAIRS

Finished Exterior Walls/Ceiling, Patching, Fresh Paint

Recent repairs to finishes and systems will reduce the visibility of flaw merely because they reduce the amount of time that a system or component of your home will have to show their flaws.

Sellers often make repairs at properties in order to make genuine improvements to the condition of the house before they sell, so you shouldn't assume that fresh paint or new finishes are meant to hide things that the seller knows are wrong.

Repairs to systems and components, however, may be ineffective. That ineffectiveness could take time to show itself—which means I can't tell if recent repairs are working!

My advise is to be patient. Homes are complex, and homeownership takes work.

Details of the Property

OBSTRUCTIONS

Building Mechanicals, Stored Materials, Debris

The Day of the Inspection

BUYER PARTICIPATION

Presentation at Property, Report Only

Your participation in the inspection is welcome. Time restrictions due to scheduling or safety concerns are common and may limit the time that you have at the property with the inspector to make observations and ask questions.

On the other hand, your full presence and participation can easily distract the inspector since he will be spending some of his time answering your questions.

There is no really perfect amount of participation for a given inspection. In general, your inspector completes his inspections alone and then delivers the headline recommendations in a presentation at the Property, immediately afterwards.

The most important part of your participation is not the time your spend at the Property; the most important factor in your participation is your interest and attention. I will note inattentive or disinterested participants.

The Day of the Inspection

FURNISHING

Unfurnished

Furnishing and stored materials all restrict what is visible at a property, and the removal of furnishing can reveal or create problems that I couldn't see.

The Day of the Inspection

EXTERIOR TEMPERATURE

Over 65

The temperature at the time of the inspection will mean that I can only observe how your house works during similar temperatures. Though many systems in your house work similarly the rest of the day and the rest of the year, some do behave differently or are restricted to use during specific temperatures.

I will try to identify all of the relevant limitations to those systems.

The Day of the Inspection

ENVIRONMENTAL CONDITIONS

Exterior Grade

The Day of the Inspection

WEATHER

Clear

Adverse weather conditions are normal and are a condition in which your house is designed to function. So there are advantages and disadvantages to having an inspection during bad weather. There are advantages and disadvantages to inspections in good weather as well!

These are the conditions that were at your property on the day of the inspection that may have limited my ability to inspect it fully.

The Day of the Inspection

SOIL CONDITION

Damp

Just like weather and temperature, the condition of the soil is can tell us some things about how your home and property perform during the year.

2: MAIN HOUSE ROOF AND DRAINAGE

Information

General Information: Things You Need to Know About Roofs

Your roof prevents leaks and directs water to the ground because it was built with a simple principle: water should only ever land in the middle of a surface--never an edge. Shingle to shingle, flashing to the membrane, roof to gutter--when the parts of your roof are successfully designed and installed so that water flows from each surface to the middle of a different surface, they are one extensive drainage system. There is, however, one big thing you need to know:

Leaks will still happen.

Designing and installing a roof is complex and dangerous, and even when it is done well, your roof is exposed to more than just water. Vegetation, weather, and solar radiation all constantly assault your roof, and they cause your roof material to degrade. Sometimes this degradation happens slowly, and sometimes it happens quickly, but it always happens. **The best you can do is prevent excessive degradation**.

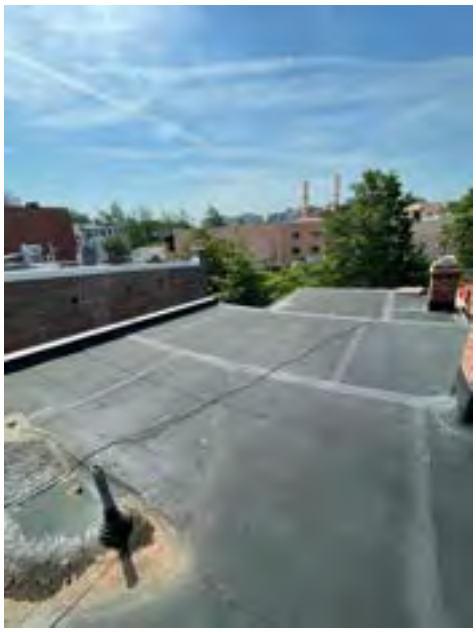
Don't allow vegetation to grow either on or near your roof. After storms, look at your roof to see if it has performed well and if you have trees nearby, manually clean your gutters. Do so regularly if your roof can be safely cleaned and treated to protect it from the sun.

Home inspectors cannot guarantee that your roof won't leak. A lot of your roof is hidden because of the way it is installed, and the condition of your roof constantly changes after we visit. All we can do is tell you if the roof, flashing, and gutters appear to have been installed in the correct order, if the system seems to be performing well, and if we see parts of the system which are degraded.

Call a professional roofer when leaks or damage appear—and they will appear. Only a pro can effectively care for a roof, so ask your agent for a recommendation to a reliable roofer and keep their number nearby.







General Information: Interior Access
Partial Attic

General Information: Exterior Access
Roof Walked

General Information: Roof Style
Flat, Combination

Structure and Decking: Roof Structure
Joists and King Beam

Structure and Decking: Decking Material
Boards

Surface Materials and Features: Surface Material
TPO

Surface Materials and Features: Features
None

The presence of the roof features may increase the lifespan of some of the roofing material by protecting it from solar radiation and the weather.

Surface Materials and Features: Likelihood of Extensive Roof Repair or Replacement within 5 Years
Partial Roof Replacement Likely

Penetrations and Flashing: Penetrations
Chimney, Plumbing Vent, Satellite Dish

Penetrations and Flashing: Flashing Material
Metal and Caulk

Edges and Drainage: Soffit Type
None

Edges and Drainage: Drainage Type
Attached Gutters, Downspouts

Limitations

General Information

ROOF INSPECTION LIMITATION

We attempted to inspect the roof from various locations and through methods, however, every roof has components that are not accessible. Often roofs leaks are impossible to detect unless they happen during of inspection, and even new or newly patched roofs can have leaks!

You acquire any relevant warranty information from the seller and should include comprehensive roof coverage in your home insurance policy.

Solutions

2.2.1 Structure and Decking

Solution Needed

VISIBLY COMPROMISED ROOF STRUCTURAL MEMBER

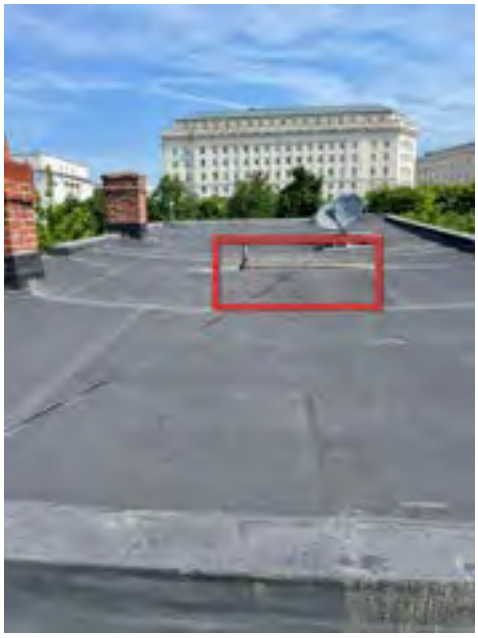
Cracked Member, Missing Support

Consult a roofer to evaluate the visibly compromised roof structural members so that you can discuss the solutions normally used to reinforce roof components.

The primary king beam has broken and has no visible support under its eastern end. Significant sagging and ponding is visible on the roof covering material at the location. Replacement of that material may be necessary as part of the repairs.








2.4.1 Penetrations and Flashing

Recommended Change

TEMPORARY ROOF FLASHING

Backwards Flashing, Deteriorated Sealant, Caulk

Repair and reapply sealant on the temporary flashing or reseal the roof seams and penetrations with a permanent flashing technique.

At the earliest opportunity, replace the temporary flashing with permanent flashing—like a manufactured boots for modern roofs or tuck-pointed counter-flashing on masonry walls—which does not rely on caulk that degrades in the sun.

Permanent flashing techniques will increase the lifespan of the roof and prevent leaks.

2.5.1 Edges and Drainage

Normal Maintenance

CLOGGED GUTTERS

Clean the clogged gutters and be sure that gutter cleaning is a regular part of your homeownership maintenance routine.

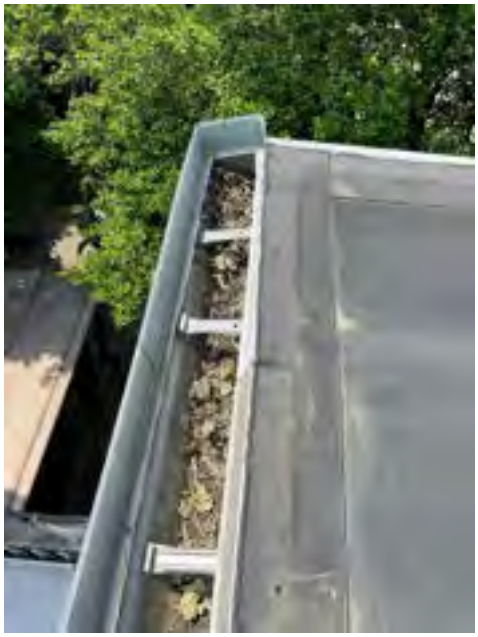
There are signs that your gutters are frequently overflowing, and locations where the roofing material may extend too far over the gutters. If you are struggling to manage the water flow from your roof do not install debris management systems—like gutter guards, gutter shields, or gutter helmets, but instead opt for increasing the size of your gutters and downspouts.

2.5.2 Edges and Drainage

Recommended Change

LOOSE GUTTER

Secure the loose gutter in a manner that will maintain a slope that directs the water to the downspout



3: GROUND-LEVEL ADDITION ROOF AND DRAINAGE

Information

General Information: Interior Access
No Attic Access

General Information: Exterior Access
Roof Walked

General Information: Roof Style
Flat

Structure and Decking: Roof Structure
Not Visible

Structure and Decking: Decking Material
Unknown

Surface Materials and Features: Surface Material
Rubber, Metal



Surface Materials and Features: Features
Protective Coating

The presence of the roof features may increase the lifespan of some of the roofing material by protecting it from solar radiation and the weather.

Surface Materials and Features: Likelihood of Extensive Roof Repair or Replacement within 5 Years
Patching Likely

Penetrations and Flashing: Flashing Material
Metal and Caulk

Edges and Drainage: Soffit Type
Non-Ventilated

Edges and Drainage: Drainage Type
Attached Gutters, Downspouts

Limitations

General Information

ROOF INSPECTION LIMITATION

We attempted to inspect the roof from various locations and through methods, however, every roof has components that are not accessible. Often roofs leaks are impossible to detect unless they happen during of inspection, and even new or newly patched roofs can have leaks!

You acquire any relevant warranty information from the seller and should include comprehensive roof coverage in your home insurance policy.

Solutions

3.4.1 Penetrations and Flashing

Recommended Change

TEMPORARY FLASHING

Backwards Flashing, Caulk

Repair and reapply sealant on the temporary flashing or reseal the roof seams and penetrations with a permanent flashing technique.

At the earliest opportunity, replace the temporary flashing with permanent flashing—like a manufactured boots for modern roofs or tuck-pointed counter-flashing on masonry walls—which does not rely on caulk that degrades in the sun.

Permanent flashing techniques will increase the lifespan of the roof and prevent leaks.

3.5.1 Edges and Drainage

Normal Maintenance

DETERIORATED FASCIA

Repair or replace deteriorated fascia boards and securely reattach the gutters with the proper slope.



4: CARRIAGE HOUSE ROOF AND DRAINAGE

Information

General Information: Interior Access
No Attic Access

General Information: Exterior Access
Ground

General Information: Roof Style
Gable, Combination, Dormers

Structure and Decking: Roof Structure
Not Visible

Structure and Decking: Decking Material
Unknown

Surface Materials and Features: Surface Material
Slate

Surface Materials and Features: Features
None

The presence of the roof features may increase the lifespan of some of the roofing material by protecting it from solar radiation and the weather.

Surface Materials and Features: Likelihood of Extensive Roof Repair or Replacement within 5 Years
High Chance

Penetrations and Flashing: Penetrations
Plumbing Vent, Chimney, HVAC Vent

Penetrations and Flashing: Flashing Material
Manufactured Boot, Metal and Caulk, Caulk

Limitations

General Information

ROOF INSPECTION LIMITATION

We attempted to inspect the roof from various locations and through methods, however, every roof has components that are not accessible. Often roofs leaks are impossible to detect unless they happen during of inspection, and even new or newly patched roofs can have leaks!

You acquire any relevant warranty information from the seller and should include comprehensive roof coverage in your home insurance policy.

Solutions

4.3.1 Surface Materials and Features

Normal Maintenance

PREVENTATIVE MAINTENANCE NEEDED FOR ROOFING MATERIAL

Loose Slates, Failed Seams, Broken Tile

Repair, patch, and apply sealants to the roofing material as needed to repair the failed seams so that you can extend the life of the current roof. Consult a roofer to determine if this level of degradation requires more extensive repairs.

4.3.2 Surface Materials and Features

Normal Maintenance

VINE GROWTH ON ROOFING MATERIALS

Clean or remove the vegetation growth on the roofing materials.

4.3.3 Surface Materials and Features

Recommended Change

ACTIVE ROOF LEAK

Consult a roofer to determine the location of the current roof leak that is visible in the carriage house attic, repair the roof leak, and replace any molded and deteriorated materials within the home

4.3.4 Surface Materials and Features

Recommended Change

DAMAGED DORMER SIDING

Replace the damaged siding on the dormer windows of the carriage house

5: BUILDING EXTERIOR

Information

General Exteriors Information: Things You Need to Know About Home Exteriors

Water that lands on your doors, windows, and siding needs to be kept out of the home just as much as the water that lands on your roof. So just like your roof, the exterior of your home is part of a drainage system. Well-maintained siding, proper flashing, and sealed penetrations cause water to drain to the ground and resist leaks. But there is something you still need to know:

Leaks will still happen.

Different types of siding materials resist water in different ways, but wind, rain, temperature changes, and solar radiation cause all of these materials to bend, saturate, shrink, and crack. This deterioration is constant, but it can be slowed down.

Paint, trim, and caulk are a cheap and easily replaceable finishing layer that protects the siding and the penetrations in it. So the frequent repairs we make to the paint, trim, and caulk are by design—it's cheaper to fix and seal these frequently than to replace the siding, doors, and windows.

On that note: doors and windows are part of the exterior drainage system, despite being transparent and openable, with direct penetrations to the exterior. They have specialized horizontal trim that needs flashing, just like the roof.

The performance of siding and flashing is hard to anticipate on a sunny day, and **flashing mistakes are common**--because building houses is really hard! Go outside during a rainstorm--when there isn't lightning--and look at how the water flows from your roof and siding, on all sides of the house. Water should never stream down or splash on the siding.

Flashing and sealing improvements can always be found in every season at a home.

Monitor the exterior of your home and look for patterns of damage and opportunities to repair deterioration.

General Exteriors Information: Siding Style
Structural Masonry, Lap

Siding: Siding Material
Brick, Cedar

Penetrations, Caulking, and Flashing: Things You Should Know About Sealing Penetrations in Your Siding

The purpose of the exterior of your home is to prevent things from coming in from the outside, but most home systems need to move stuff in or out. That means siding must have penetrations to let system components through, and the are gaps between the siding, and those components need to remain sealed.

Sealant on these gaps needs to be capable of expansion and contraction.

System components that penetrate your siding are made from different materials than the siding, so they expand and contract at different rates in response to heat. That causes the gaps around them to expand and contract over the year.

Techniques and materials that can tolerate this expansion are called an "expansion joint," They are critical to preventing air, moisture, and pest entry into the home. Expansion joints should be made of flashing, siding materials, or a weather-resistant sealant—**not spray foam insulation**.

Compared to traditional expansion joints, spray foam performs unreliably, even if it is labeled as intended for exterior use. Spray foam also adheres to the interior of the siding instead of the surface, which makes it difficult to remove and very difficult to maintain.

All sealants need maintenance.

Pick sealants that are long-lasting and easy to maintain. The sealant with which people have the most familiarity is caulk. When caulk needs maintenance, it easily separates from the seams around your home and can easily be replaced with new exterior grade caulk.

Penetrations, Caulking, and Flashing: Vent Penetrations in Your Siding
Plumbing, Attic, Kitchen, Dryer

Penetrations, Caulking, and Flashing: Electrical Penetrations in Your Siding
Service Entrance, Telecom

Penetrations, Caulking, and Flashing: Plumbing Penetrations in Your Siding
Standard Hose Bibbs, Gas Supply

Penetrations, Caulking, and Flashing: HVAC Penetrations in Your Siding
Ducts

Doors, Windows, and Trim: Exterior Trim Material
Wood

Decorative trim is a kind of permanent expansion joint. Since doors and windows penetrate the siding, trim should be present around them. The trim should also cover the gaps created by transitions between exterior wall materials. The trim itself should have a sacrificial caulk seam installed around it.

Doors, Windows, and Trim: Exterior Window Features
Removable Screens, Security Bars

Doors, Windows, and Trim: Primary Exterior Door Types & Materials
Swinging, Sliding, Wood, Double Pane

Doors, Windows, and Trim: Primary Exterior Door Penetrations and Features
Peep Hole

Doors, Windows, and Trim: Secondary Exterior Doors
Sliding Screen Door

Limitations

Doors, Windows, and Trim

I COULD NOT DETERMINE OR EXCLUDE THE PRESENCE OF HAZARDOUS PAINT ADDITIVES

Specialized equipment and testing techniques are necessary to determine the presence of any particular paint additive, and I did not perform any such test.
Although the production of paints with lead-based additives was prohibited in 1978, suppliers were allowed to sell their remaining products after that time, and homeowners of the era were known to reapply paint from cans they had purchased earlier. Therefore, the date of a home or renovation is not a reliable indicator for the presence of these additives. If you are concerned about the presence of toxic substances in your paint, the most reliable risk management strategy may be to encapsulate or remediate any suspect coating on the exterior of the building.

Doors, Windows, and Trim

LONGEVITY OF DOORS AND WINDOWS

Whereas the longevity of exterior trim can be extended with frequent maintenance and painting, doors and windows are physics operated and are exposed to the weather and sun much more constantly than trim. They will necessarily have components that will need eventual replacement, and I cannot determine the remaining lifespan of any door or window.

Doors, Windows, and Trim

TRIM AND TRIM COVERS COVER TRIM AND SEAM

Trim covers conceal the presence, absence, and condition of the trim and finishing coating under them. Trim itself conceals seams between siding materials, door and window components, and any related seams. I was unable to inspect any covered trim or seams covered by trim and trim seam sealants.

New trim, untreated trim, trim covers, and recently replaced trim implies the presence of recent work, and those areas should be maintained and monitored closely for any signs of new or continuing deterioration.

Solutions

5.2.1 Siding

Normal Maintenance

SEPARATED SIDING SEAMS

Seal the separated siding seams and penetrations with flashing, siding materials, or a weather resistant sealant—not spray foam insulation.

5.2.2 Siding

Normal Maintenance

POINTING GAPS

Install pointing and all the locations where the mortar has deteriorated to normal wear and aging.

This will help prevent further deterioration and water penetration.

5.2.3 Siding

Solution Needed

DETERIORATED SIDING AND SHEATHING

Remove the deteriorated cedar shingles from the west, south, and east sides of the home, replace any deteriorated sheathing, install a water resistant exterior barrier (for example Tyvek), install new siding, and seal all of the gaps around any remaining penetrations and between siding materials.

West

West Zoom-in

West Zoom-in


South


South Zoom-in


South Zoom-in


East


East Zoom-in


East Zoom-in

5.3.1 Penetrations, Caulking, and Flashing

Recommended Change

UNSEALED SIDING PENETRATIONS

CARRIAGE HOUSE

HVAC Refrigerant Line, HVAC Drain Line

Seal the exterior penetrations with flashing, siding materials, or a weather-resistant sealant—**not spray foam insulation**.

5.3.2 Penetrations, Caulking, and Flashing

Recommended Change

UNIDENTIFIABLE SIDING PENETRATION

Identify the purpose of the siding penetration and determine if it is necessary or should be abandoned and sealed.

6: LOT AND LANDSCAPING

Information

General Lot and Landscaping Information: Things You Need to Know About the Property Around Your House

The ground around a home completes the drainage system that starts with the roof and continues with the siding. The slope of the land around your home is called “grading,” A positive grade directs surface water away from the home instead of allowing it to soak into the ground near the house and end up in your foundation. The thing you need to know is:

Foundation water will still happen.

Unfortunately, nature resists the effects of grading. The high ground can divert surface water, trees and bushes can create little ponds, and debris and structures can hold water--all of which can cause foundation moisture. Some properties have springs or are prone to groundwater, which cannot be resolved with grading at all!

Plants and outdoor structures on your property have special grading needs. Driveways and garages store your stuff, and decks and steps need to be kept dry to resist degradation and slip hazards. Trees and plants need to be kept wet to stay alive. If plants or structures grade improperly or accumulate debris, these places can offer easy entry points into your home for water and pests.

Like moisture prevention, effective pest control is preventative and **starts with responsible maintenance of the lots and grounds around the house**. Keep your deck and garage clean, the area around the bottom of your siding free of debris, and the vegetation trimmed away from the building.

Yard work sucks, but it is essential.

Hiring someone to cut your grass is fine, but active maintenance of the grounds takes care and attention—to what is growing around the house, where animals can get into the house, and where the water is going.

General Lot and Landscaping Information: General Surface Orientation

Below Street Level

General Lot and Landscaping Information: Vegetation and Ground Cover
Gravel/Debris, Pavers/Bricks, Vine and Ground Cover, Large Trees

General Lot and Landscaping Information: Occupant Access Features
Walkway Lighting, Steps, Sidewalk

Fencing, Landscaping, and Retaining Walls: Fence Material and Style
Brick, Metal, Gated, Hip Height

Fencing, Landscaping, and Retaining Walls: Retaining Wall Material & Location
Mortared Brick, Abutting Private Stairway, Abutting Outdoor Living Space, Abutting Alley

Fencing, Landscaping, and Retaining Walls: Retaining Wall Features
Weep Holes

Downspouts, Grading, and Drainage: Things You Need to Know About Grading

Grading is important enough to deserve further discussion. The "grade" around your home is the surface of the land and and landscaping, and we refer to the slope of the grade around your home as "grading."

The point of grading is to direct water away from the home, and is really only effective if the grading is "positive."

Positive grading slopes away from the home, so that the highest point of the grade abuts the foundation of the home and every part of the grade that is farther away from the home has lower elevation than all of the grade nearer the home. Neutral grading does not have lower elevation farther away from the home, but it does not have higher elevation either. Negative grading reduces in elevation as it approaches the home.

General guidance advises that the grade around the home (including driveways and walkways) should extend no higher than 3" below the top of window wells, 6"-8" below the bottom of the siding, and 12" below the top of the foundation wall, wherever possible. Effective positive grading around the home slopes away from the home a minimum of 6" for the first 10' away from the foundation, since that is a distance from which water can be expected to soak into the ground with-out penetrating or undermining the foundation.

Unless your home is built on a wide and level plot of land, grading is rarely perfectly positive. **When the guidance cannot be met, several options are available to create effective drainage.** Grading can also effectively direct water away from the home if it deposits into a swale. A "swale" is a valley-like, v-shaped imprint in the ground that routes water at least 10' away from the foundation. Drainage systems, like french drains, are sometimes used as well, but are less reliable since they can clog with silt and must be cleaned.

Any ponding and soil saturation within 10' of the home should motivate you to reconsider the grading and drainage in the area.

Most municipalities recommend that all water which lands within your property should have the opportunity to soak into the ground on your property, and as a result many builders will install retention ponds or drainage collection. If one of these structures is present on your property, you should consult a landscaping contractor for more details.

Downspouts, Grading, and Drainage: Downspout Termination
Undirected, Underground Drain

Downspouts, Grading, and Drainage: Grading Modifications
Retaining Walls

Downspouts, Grading, and Drainage: Access Drainage
Walkway: Positive Grade, Stairway: Positive Grade, Outdoor Living Space: Positive Grade

Downspouts, Grading, and Drainage: Run-off Retention
Retaining Wall

Downspouts, Grading, and Drainage: Driveway Material
Gravel

Walkways, Stairs, and Railings: Railing Location
Exterior Stairs

Walkways, Stairs, and Railings: Walkway Material
Stone, Concrete

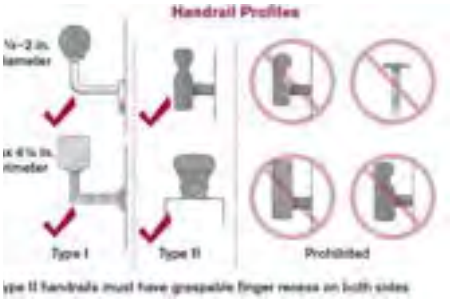
Walkways, Stairs, and Railings: Handrail Attachment

Baluster/Newel Post Mounted

Generally-accepted modern safety standards recommend that graspable handrails should be present on any ramp and at the open sides of any stairway with 4 or more risers.

Handrails should extend the entire distance between the top-most and bottom-most landing, and they should be between 34" and 38" above either the standing surface or the line connecting the tread nosings on a stairway.

"Graspable handrails" have recesses on both sides of the handrail, and I have included a picture demonstrating handrail design guidance that is generally accepted by most municipalities.



Generally Accepted Graspable Handrail Designs

Walkways, Stairs, and Railings: Guard Type

Metal

Generally-accepted modern safety standards recommend that a non-climbable guard and handrails should be present on any ramp, the open sides of any stairway with 4 or more risers, and at any location where a person can stand which is more than 30" higher than the grade at any immediately surrounding areas.

Guardrails should not be climbable and should extend at least 36" above the standing surface; the gaps between individual components of the guards should not be large enough for a 4 & 3/8" sphere may not pass through at any point, and the gaps between the guardrail and the surface on which a person can stand should not be large enough for a 6" sphere may not pass through at any point.

Walkways, Stairs, and Railings: Stair Location

Property Access, Entry, Sidewalks, Basement, Landscaping/Garden

Although stairs should be installed consistent with the specific guidance from your municipality, generally accepted guidance for the dimensions recommends that stair treads should be level and should be at least 36" wide and 10" deep, risers should be between 4" and 7 3/4" high, there should not be a height difference between risers or depth difference in treads in excess of 3/8", and the open space on between riser and the stair tread below it should not exceed 4".

Treads should not slope more than the 1/4" per foot, and the resulting slope of the stairway should not be more than 42 degrees from the level of the ground.

Every staircase should have a landing at the top, at the bottom, and at least every 12 vertical feet in between, and the landing should be as deep as the staircase is wide. There should not be any single steps before landings.

Walkways, Stairs, and Railings: Tread Material

Stone

Outdoor Living Spaces: Outdoor Living Space Type

Patio

Outdoor Living Spaces: Attachment Type

On Grade

Outdoor Living Spaces: Surface Material

Pavers

Water Features, Irrigation, and Pools: **Above Ground Water Features**

Fountain

Limitations

Fencing, Landscaping, and Retaining Walls

FENCES, TREES, AND RETAINING WALL INSPECTION LIMITATIONS

Debris and vegetation obscure much of the structure of a fence, so aside from the general condition of the wood and obvious signs of collapse, fencing lies beyond the scope of the home inspection.

The existence and cause of any excess growth, disease, or threats to the health of any tree, plant, or animal on your property requires testing by an expert.

Out of courtesy only, I noted readily visible averse conditions in any tree large enough to come in contact with your home should that tree fall, but I only look for affirmative indications that you should consult a contractor. Even if did not mention a specific reason to consult a professional, I did not and do not discourage or advice you to forego an inspection by an arborist or landscape architect.

The ability of a retaining wall to remain intact is dependent upon several factors that could not be evaluated at the time of the inspection, including the building technique used which has been covered with soil, the permeability of the soil that they retain, the grade around them, and the geometry and condition of the roots for any trees that they retain. That means that although I can tell you is if there is a visible record of movement, I cannot determine not whether it is continuing or whether it has stopped.

Downspouts, Grading, and Drainage

DRAINAGE OCCURS ABOVE AND BELOW THE SURFACE

Normal Access Restrictions Due to Grading and Vegetation, Recent Upgrades or Maintenance

Drainage on the exterior of your property is a unique event at your home that occurs both above and below ground.

Above ground, drainage happens when it is actively raining, and unless that happened with sufficient volume at the time of the inspection, the exact flow pattern of water on the surface could not be seen. Recently maintained landscaping, like freshly mowed grass, and overgrown shrubs and vines obscured the details of the grade around a home. Recently added drainage strategies and recently added sod or mulch will changed the grading pattern around the home without leaving indications about the past performance of your grading.

Below ground, water seeps into the ground and spreads through the soil long after the rain stops. This movement is effected by the composition of the soil and the presence of buried objects and tree roots, all of which I could not see. I also could not determine the condition of any buried drainage system, including blockages due to silt, any root system, or collapsed pipe work.

Underground water, like a natural spring or a high water table, could not be identified, and determining the cause of soil compaction, slab or grading movement, and soil condition requires the services of a soil (geotechnical) engineer.

Walkways, Stairs, and Railings

THE INSPECTION OF STAIRS, RAILINGS, AND STAIRS FOUNDATIONS IS LIMITED

I cannot physical test of the impact resistance of stairs and railings, and I cannot determine the type or adequacy of and coatings or treatments applied to treads.

The condition of any component at the grade or lower, including concrete pads or footers, could not be examined

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Outdoor Living Spaces

DECKS SHOULD BE EVALUATED BY A PROFESSIONAL

I could not determine the pressure-treatment of any wood components or the type of surface finish coatings or penetrating finish coatings applied to protect the deck, balcony, or stairs components.

Guidance for deck, balcony, and stair framing and attachments depend on the specific design characteristics and components used in the construction of the system, and the compliance of the construction practices with building guidance accepted by your municipality was not examined or verified.

Out of courtesy only, I noted the type and condition of readily accessible and visible parts of the deck in order to look for affirmative indications that you should consult a contractor. Even if did not mention a specific reason to consult a professional, I did not and do not discourage or advice you to forego an inspection by a licensed deck contractor.

If I could identify the presence of flashing on a ledger board, I only did so at a representative location, and I could not verify the quality of its installation under the siding.

Water Features, Irrigation, and Pools

LANDSCAPING WATER FEATURES WERE BEYOND THE SCOPE OF YOUR INSPECTION

If present, landscape irrigation systems, recreational water installations, and man-made landscaped water features were not inspected--including ponds, stream, and fountains; above and below ground pools, spas, and hot tubs; and permanently installed or temporary irrigations for lawn, arable soil, trees, and vegetation.

Out of courtesy only, I noted the type and equipment data affixed by the equipment manufacturer of readily accessible and visible parts of the irrigation, pool, and hot tub systems. I did not look for affirmative indications that you should consult a contractor. Even though I did not mention a specific reason to consult a professional, your irrigation system, pool, hot tub, and water-based recreation features should be inspected by a professional that specializes in their installation and maintenance.

Solutions

6.2.1 Fencing, Landscaping, and Retaining Walls

Normal Maintenance

LEANING RETAINING WALL

Install weep holes at the foot of the leaning retaining wall and improve the surface grading above the retaining wall to prevent movement due to hydrodynamic pressure.

Install a crack monitor to gauge further movement and consult a landscape contractor if movement continues.

6.3.1 Downspouts, Grading, and Drainage

Recommended Change

NEGATIVE GRADING

Surface of the Building Lot is Below Neighboring Properties, Outdoor Living Space Slopes Toward the Home

Correct the negative grading at the side of the house to direct water either toward an underground drain, into a swale, or off of the property.

The grade around the home (including driveways and walkways) should slope away from the home a minimum of 6" for the first 10' away from the foundation or into a swale. A "swale" is a valley-like, v-shaped imprint in the ground that routes water off of the property.

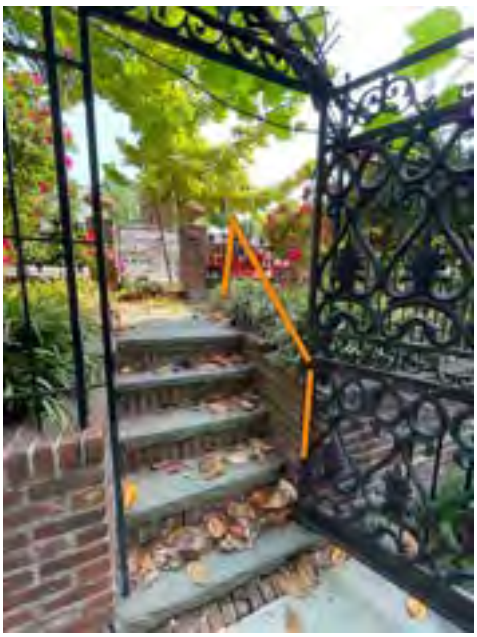
6.4.1 Walkways, Stairs, and Railings

Recommended Change

MISSING EXTERIOR HANDRAIL

Install the missing exterior handrail.

All stairs with 4 or more risers should have a handrail.



6.4.2 Walkways, Stairs, and Railings

Recommended Change

NON-STANDARD EXTERIOR STAIRWAY DIMENSIONS

Risers In Excess of 7 3/4" in Height, Riser Height Differences in Excess of 3/8"

Modify the exterior stairs that have non-standard dimensions so that the stairs are level and also have both consistent riser heights and tread depths in order to prevent tripping.

Although stairs should be installed consistent with the specific guidance from your municipality, generally stair treads should be level and should be at least 36" wide and 10" deep, risers should be between 4" and 7 3/4" high, there should not be a height difference between risers or depth difference in treads in excess of 3/8", and the resulting slope of the stair should not be more than 42 degrees from the level of the ground. A landing should be present on every staircase for at least every 12 vertical feet.

6.6.1 Water Features, Irrigation, and Pools

Recommended Change

NON-FUNTIONAL FOUNTAIN

Consult a landscaping water feature specialist to determine the location of the water supply for the fountain, and activate the nonfunctional fountain

7: FIRE SAFETY

Information

General Fire Safety Information: Things You Need to Know About Fire Safety

Fighting a fire is something that only trained people can do if they have heavy and expensive equipment strapped to their backs. Escaping a fire is something every ambulatory person should be able to do if they have enough time to come up with a plan before the fire gets into their room or they are overwhelmed by smoke. This fact is a vital thing to need know about in-home fire safety:

Fire safety doesn't help you fight fires; it allows you to get out if there is a fire.

We "fight" fires in our home with prevention--techniques included in properly installing our appliances and our electrical and combustion systems. However, fire safety techniques are all about alerting the occupants of a home to a fire and then giving them enough time to develop an exit strategy.

Alerting the occupants of a home is the role of smoke detectors. Providing time is the role of a fire-break or a firewall. As long as there is a resistant material between you and high-risk areas, it is likely that you will have time before smoke and fire can get into your room.

You need to know that **fire safety requires your attention**. If the systems present in your home are thoughtlessly altered, are accidentally deactivated, or are blithely ignored, then you remove the best defense you have against the worst risk.

Manage your fire safety risks by keeping your systems powered and replacing your smoke detectors.

Home inspectors can see some things about the robustness of your fire safety system at the time of the inspection, but not all things. Active attention to fire safety is your responsibility when we leave your home.

General Fire Safety Information: Smoke Detector Placement

The National Fire Protection Association suggests that a smoke detector be installed inside and outside each room designed for sleeping and at least one on every level of the house (including the basement), at the bottom of each set of stairs, in the garage, and in any room with stored chemicals or mechanical systems. They should be placed on walls 12" from the ceiling, and the should not be installed in areas where where drafts and normal heat/smoke can interfere with operation, like in cooking areas, near doors and windows, or around vents or ducts.

Contact your local fire department for their recommendations and with any other fire safety questions you may have.

Emergency Egress: Below-Grade Bedroom Egress
No Bedroom Present

Emergency Egress: At-Grade Bedroom Egress
No Bedroom Present

Emergency Egress: Above-Grade Bedroom Egress
None

Limitations

General Fire Safety Information

UNABLE TO TEST DETECTORS FOR CAPABILITY TO DETECT SMOKE

During a home inspection, smoke and carbon monoxide detectors cannot be tested for their capability to detect smoke without creating smoke, which could possibly cause damage to finishes or materials at the property. The capability for detectors to activate with the “test” button will indicate that the alarm makes noises, but that may be mistaken for a test of their smoke detection capability. Therefore, I do not test smoke or carbon monoxide detectors at all.

General Fire Safety Information

PARTIALLY ACCESSIBLE FIREWALL

The firewall between rooms (and between the garage and the main house) is always at least partially obscured by debris and finishes. I will identify defects to the best of my ability.

Solutions

7.1.1 General Fire Safety Information

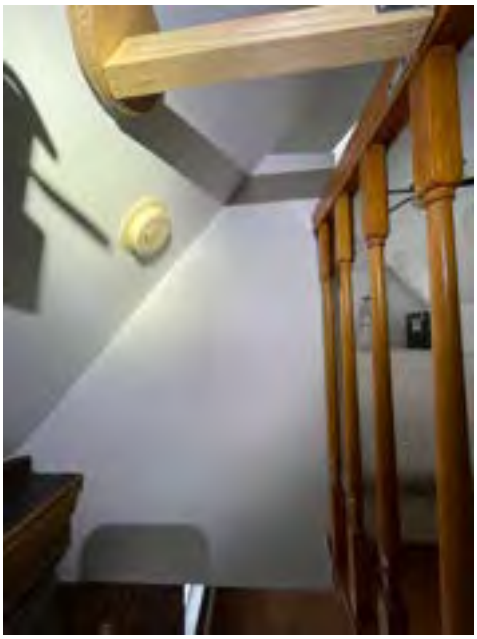
Normal Maintenance

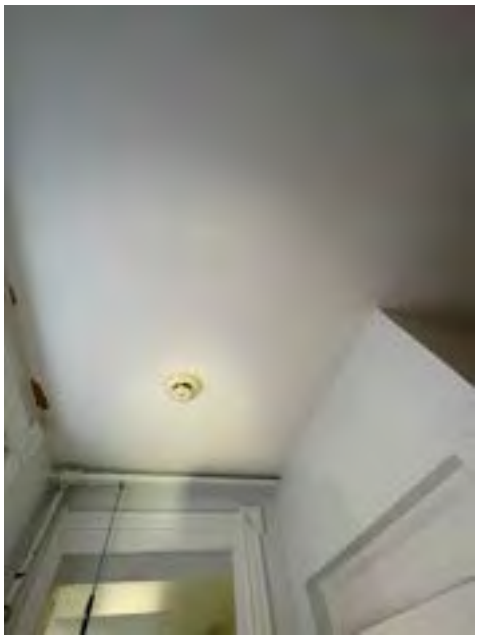
CONVEYING SMOKE DETECTORS

Replace all smoke detectors that convey with the property when you move in.

Because smoke detectors are such a vital safety feature in homes, *I make this recommendation to ALL home buyers* regardless of the age of the any of the smoke detectors. You should be confident that they are operational and installed correctly, and the best way to ensure that is to install them yourself.

Check with your local fire department for the recommended placement, number, and power supply.





8: ELECTRICAL SYSTEM

Information

General Electrical System: **Things You Need to Know About Electrical Systems**

Your electrical system runs through all corners of your home because electricity powers all modern conveniences. Although it is everywhere, current building practices hide the electrical system well, and what they conceal is also the most important thing about your electrical system:

Your home's electrical system is made chiefly of safety features.

Electricity is extremely dangerous. There is nothing intuitive about how electricity works, and no metaphors make much sense when you talk about it. Over the hundred or so years that we have built electrical systems into our homes, we have learned critical lessons about protecting ourselves from fatal shocks and our homes from electrical fires.

The most significant safety feature used to protect ourselves and our homes is simple: we keep the system hidden and sealed away from everything else in the house with resistant wiring and boxes. As long as these separations are kept intact, the home and the occupants are much safer, so you shouldn't go cutting into walls or modifying things willy-nilly.

The rest of the safety features are much more sophisticated and require technical expertise to install correctly. **YouTube is NOT a good source of advice for do-it-yourself electrical work**. Aside from resetting over-current devices like GFCI outlets, breakers, and fuses, the only thing you can do in your home without training is replacing a light bulb--and that is okay!

Home inspectors can only do so much when it comes to inspecting your electrical system since it is so well concealed and its safety features are so complex. We can usually tell you the electrical system parts that we can see work. Consult an electrician if you notice that any portion of your electrical system is behaving abnormally. Flickering lights, burnt-plasticy smells, the sounds of sparking, and vibration are abnormal and should be evaluated by a professional. The same can be said for visible, loose, or damaged parts.

Electrical work is hazardous, and mistakes can be fatal.

If you need to make repairs or modifications to your home's electrical system, consult a qualified electrician.

General Electrical System: **Service Voltage Rating**

120/240 Volts

General Electrical System: Incoming Electrical Service Amperage

Current Service Size Un-Likely Sufficient for Increased Usage, 200 Amps

The amperage of the service at a home is determined by three factors: the size of the service entrance cable, the rating on the main service panel, and the rating of the primary overcurrent protection device.

As a result, the amount of available amperage at a home is fixed. Usage varies, however, over the day and year. To determine if you could permanently increase your usage by adding new appliances or circuits, consult an electrician to assess your current marginal use and how much your needs would grow based on your renovation plans. Counter-intuitively, the sum of the rating for the branch overcurrent devices in the panel box will always be more than the rating of the primary overcurrent device. As a result, counting your breakers does not give a reliable sense of your marginal use.

General Electrical System: Unused Locations in the Electrical Panel

Usage Currently Exceeds the Design Limitations of the Panel Box

You would add circuits to a panel box if you were to install appliances for which the manufacturer or local building regulations require a dedicated power source.

Recreational appliances are energy intensive and require dedicated power sources (wood working equipment, hot-tubs, hydroponic grow-lighting, pottery kilns, studio-grade recording equipment, computer towers, et cetera) but more practically, this would mean the installation of kitchen or laundry appliances in a new area of the home or a charging port for an electric car.

General Electrical System: Consider Upgrading Your Electrical System

Given the size of the electrical supply and the condition of the materials in the electrical system, an upgrade may be necessary for you to expand your electrical usage.

Often called a "heavy-up," increasing the electrical supply requires a modernization of the electrical service by both the homeowner and the power company.

Heavy-ups generally begin when homeowners acquire a permit from their municipality for the upgrade, then replace the service entrance cable, primary overcurrent device (aka the main breaker), electrical service panel (main panel), and any antiquated connections in the branch wiring.

After the municipality verifies the safe completion of the electrical work, the power company will schedule a time to replace the electrical meter and the service cable from the street.

Incoming Electrical Service:

Incoming Service Type

Service Lateral

Incoming Electrical Service: Meter Base Location
Exterior

Incoming Electrical Service: Visible Grounding
Plumbing

Incoming Electrical Service: Incoming Conductors
Braided Aluminum

Main Panel & Overcurrent Devices : Location
Basement, Living Room

Main Panel & Overcurrent Devices : Labeling
Partial

Main Panel & Overcurrent Devices : Primary Electrical Service Overcurrent Protection Rating
200 AMP

Main Panel & Overcurrent Devices : Primary Electrical Service Overcurrent Type
Main Breaker

Main Panel & Overcurrent Devices : Branch Overcurrent Types
Circuit Breakers

Main Panel & Overcurrent Devices : Visible Panel Grounding Connections
None Visible

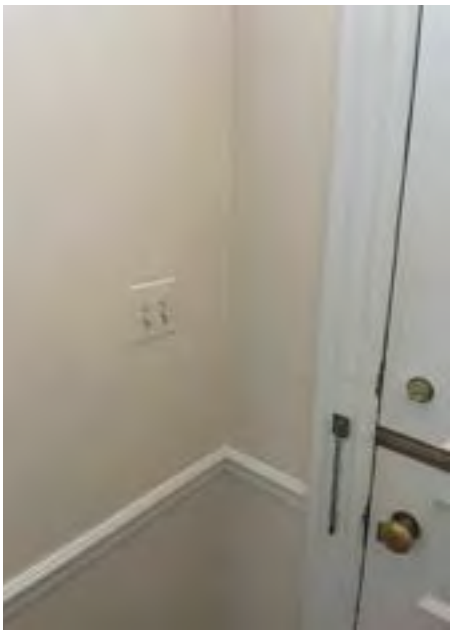
Wiring, Receptacles, & Fixtures: General Conductor Material
Copper, Copper Coated w/ Aluminum, Braided Aluminum

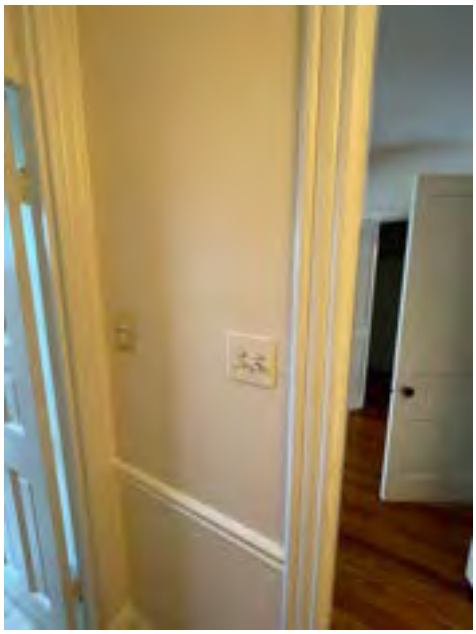
Wiring, Receptacles, & Fixtures: Conductor Sheathing
Non-Metalic, Armored Cable

Wiring, Receptacles, & Fixtures: GFCI Protected Locations
Kitchen, Bathroom

Wiring, Receptacles, & Fixtures: Knob-and-Tube Wiring Suggested by Outdated Switch Style

Consult an electrician to evaluate the wiring providing power to the alternate push-button switches. Although it is not conclusive, this style of switch in a home of this age highly suggests that knob-and-tube wiring is present and providing electricity to fixtures via jury-rigged junctions.





Sub-Panels: Sub-Panel Location
Carriage House, Laundry

Sub-Panels: Panel Capacity
125 AMP

Sub-Panels: Labeling
Un-labeled

Sub-Panels: Usage
Expansion Room Available

Sub-Panels: Visible Grounding
4-Wire Sub-Panel

Limitations

General Electrical System

ACCESS LIMITATIONS

Inaccessible Outlets, Inaccessible Appliance Outlets, Finished Walls and Insulation

I attempted to inspect the electrical system from various locations and using different methods, however, the majority of the electrical system is behind walls or covers. This is a non-invasive inspection and I did not remove finishes, stored items, or box/receptacle covers because doing so can cause damage or changes so I could not observe the entirety of the electrical system.

Incoming Electrical Service

UNKNOWN GROUNDING AND BONDING

Consult a licensed electrician to confirm the proper installation of electrical system grounding and bonding. I did not see any grounding wires in the box or any grounding connections

Solutions

8.3.1 Main Panel & Overcurrent Devices

Recommended Change

MISSING KNOCK OUTS

Install the missing knockouts to completely sealed the interior of the panel box.

8.3.2 Main Panel & Overcurrent Devices

Recommended Change

MULTI-TAPPED BREAKER

Consultant electrician to determine solutions for the multi tapped breaker.

This type of breaker is designed to provide power to one circuit, and diverting power at this location could cause damage to electronics on these circuits or be a potential pacifiers. There appears to be no locations for additional breakers inside panel, so alternate repair methods may be needed.

8.4.1 Wiring, Receptacles, & Fixtures

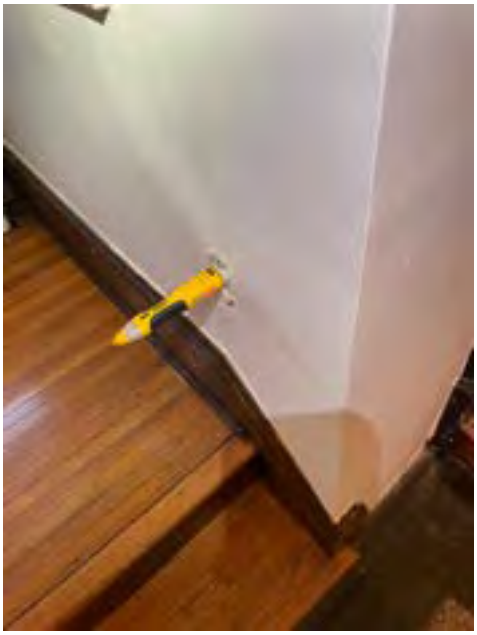
Solution Needed

INCORRECTLY WIRED OUTLET

BASEMENT

Open Ground

Correct the improperly wired outlet(s).



8.4.2 Wiring, Receptacles, & Fixtures

Recommended Change

MISSING GFCI PROTECTION

PATIO ADDITION, CARRIAGE HOUSE KITCHEN

Exterior, Within 6' of a Water Source, Kitchen

Create the missing GFCI (Ground Fault Circuit Interrupter) protection for all 15- and 20-amp receptacles at the noted locations.

8.4.3 Wiring, Receptacles, & Fixtures

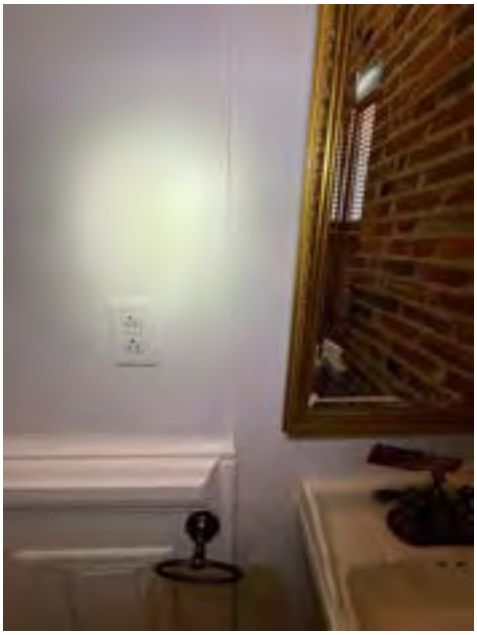
Recommended Change

FAULTY GFCI PROTECTION

CARRIAGE HOUSE BATHROOM, FOUNTAIN

Painted Outlet, Does Not Trip

Correct the faulty GFCI protection at the noted locations.



8.4.4 Wiring, Receptacles, & Fixtures

Recommended Change

UNPROTECTED WIRING

Loose Connection, Exposed Wire

Repair, abandon and remove, or properly conceal the unprotected wiring in a sealed junction box attached to a solid surface.

8.4.5 Wiring, Receptacles, & Fixtures

Recommended Change

UNSECURED JUNCTION BOX

Missing Cover Plate

Conceal the exposed wiring in a sealed junction box secured to a solid surface.




8.4.6 Wiring, Receptacles, & Fixtures

Recommended Change

EXPOSED INCANDESCENT BULB IN A CLOSET

CARRIAGE HOUSE HVAC CLOSET

Replace the exposed incandescent lightbulb above the closet door interior, and replace it with a low profile lightbulb that is not prone to breakage.

8.5.1 Sub-Panels

OVER-SIZED SUB-PANEL BREAKER

Recommended Change

Remove the oversized 20amp breakers and install 15amp breakers appropriate for protecting 14gauge wires.

8.5.2 Sub-Panels

DOUBLED SUB-PANEL NEUTRALS

Recommended Change

Distribute the neutral wires on the omnibus bar so that there is only one wire under a screw.

9: PLUMBING SYSTEM

Information

General Plumbing Information : Things You Need to Know About Domestic Plumbing

Modern sanitation practices are possible because of the easy access to two everyday miracles: clean water on demand and the public sewer system. The plumbing system that creates this access is actually two very different, equally clever systems installed next to each other: a pressurized fresh-water supply system and a gravity-based waste-water diversion system. Each system uses different materials, and each has its features designed to prevent clogs and leaks, but you need to know one thing:

Clogs and leaks will still happen.

Clogs happen where pipes bend. Waste plumbing should always have a bend (called a “trap”) to prevent sewer gasses from entering the house, and these traps are located at the toilet, the sink, and the shower. These fixtures are a visible and easily accessible portion of the waste plumbing system, which means fixing these clogs usually is pretty straightforward.

Leaks almost always happen where pipe sections are fitted together, like at corners and fixtures. Unfortunately, the water doesn’t always show up directly under the leak because water is squirrely. Roof leaks will often disguise themselves as plumbing leaks, and plumbing leaks may never even show up on finished surfaces! Simply put: **leaks usually take work to chase down**.

Each home has a water heating strategy, and your maintenance needs will depend on the type of system present in your home. Home inspectors can tell you what kind of water heater you have and where your main shut-off is, but aside from seeing if your plumbing is working normally, they cannot see much of your plumbing distribution system, its history, or how well it has been maintained.

Fortunately, plumbing maintenance is straightforward--use the plumbing often; if you are not going to use it for a long time, turn it off, and never ever ever use corrosives to clear a drain.

Clear clogs manually, use that accessible shut-off if there is a leak, and always call a plumber if in doubt.

General Plumbing Information : Water Supply Type
Public

General Plumbing Information : Waste Disposal Type
Public

General Plumbing Information : Hot Water Source
Gas Water Heater

Water Supply System: Visible Water Supply Entrance Material
Water Supply Entrance Was Concealed Behind Finished Materials, Copper

Water Supply System: Main Incoming Water Shut-off Location
Basement, Under Stair

Keep the area directly in front of your main water shut-off free from debris and stored items so that you can access it easily in the event of a plumbing emergency.

Turning off your water supply when you go on vacation is a common sense way to protect yourself from loss, and it will keep the valve in good working order.

Water Supply System: Water Supply Distribution Material
Copper, Galvanized Steel

Water Supply System: Galvanized Steel Water Distribution Plumbing

Your supply distribution plumbing system appears to contain the galvanized steel plumbing and fittings.

Although *galvanized steel plumbing is not generally considered a health hazard*, the interior of the plumbing corrodes. This corrosion gradually reduces the functional water pressure to branches of the home--which may be inconvenient and can cause severe temperature changes when multiple fixtures are in use simultaneously. Continued buildup of the corrosion will eventually block the flow of water entirely. Furthermore, dislodged corrosion may enter and damage you plumbing supplied appliances, like your water heater, clothes washing machine, refrigerator, etc.

Hot Water System: Water Heater Location

Utility Room/Closet

Hot Water System: Manufacturer & Data Tag

Bradford White

Hot Water System: Age

27 Years

All water heaters require regular maintenance, and if you notice changes in the sounds from its operation and the temperature or color of your hot water, maintenance and repair may be necessary.

Budget to replace the water heater when it is 15 years old. This is around the point in time when normally installed water heaters start having normal age-related leaks. Even if you have a water heater that currently functions and does not appear to leak, proactive replacement of your water heater can avoid anticipatable losses due to leaks.

Hot Water System: Tank Capacity

48 Gallons

Flush and service your water heater annually for optimal performance.

Hot Water System: Installed Water Heater Safety Features

Isolation Valve, TPR Valve Pipe, TRP Valve

Waste and Vent System: Waste Plumbing Exit Material

Cast Iron

All waste lines exiting the home should be properly insured and inspected, but this is especially true of aged waste lines, waste lines we couldn't see, and waste lines endangered by tree roots or building movement.

Normal homeowner's insurance policies do not come with coverages that will automatically indemnify you in the event of a loss due to the failure of a waste line exiting the home; discuss *buried utility lines coverage* and *sewage water backup protection* during your conversation with your insurer.

If you have a waste line that cannot be verified as a modern waste line material (i.e., if your waste line may be cast iron, terra cotta, wood, orangeburg pipe, or some other material), consult a plumber to evaluate the drain line with a video scope and discuss if any repairs are likely in the near future.

Waste and Vent System: Internal Waste Plumbing Material

Plastic, Cast Iron, Exterior Plumbing

Never use corrosive drain cleaners on your plumbing. For clogs, use a plumbing snake or consult a professional.

Waste and Vent System: Waste Drainage Clean-out Location

Not Visible

Waste and Vent System: Waste Plumbing Vent Type

Exterior Rear Wall Plumbing

Although your water supply system works well because it is pressurized, pressure works against your waste system.

Most of us have had the experience of putting a straw in a drink at a restaurant, covering the top of the straw with your thumb, and lifting your straw up to see the fluid which stays in the straw. Your drink can't flow out of the straw until you remove your thumb so that as it flows out, air can come in to replace it. (For all you science nerds: the pressure of the atmosphere is actually holding the drink in the straw.)

Your waste plumbing system works the same way. If you flush your toilet or drain a sink, that water runs down your plumbing, and if there is not sufficient air to come in and replace it as it flows out, it won't flow out at all.

In order to allow enough air into the waste system, we install vents at the top of each waste pipe. These waste pipes, however, are connected to the public sewer system. To prevent sewer gasses from accumulating in the home, we either place that vent outside or create an interior vent that does not let air from the waste system into the house.

Faucets and Fixtures: Bath & Shower Enclosures

Mud Set Tile

In order for your bath or shower enclosures to remain water tight and protect the walls and floors around the enclosure, all grout and caulk must be well installed and maintained.

Caulk should be installed and allowed to cure on the interior of the enclosure only, when the tub is full of water so that the bottom portion of the enclosure is weighted down like it will be when it is in use. Remove and reinstall any stained or deteriorated caulk early.

Grout it porous and must remain sealed. In fact, before you use any of your new bathrooms, you or a handyman should apply several layers of grout sealant. Grout should NOT be used at the bottom corner of the enclosure between the walls and floor.

Faucets and Fixtures: Hose Bibb Shut-off Locations

Unknown

As part of your annual home maintenance routine, shut off the water supply to your external hose bibs, open the exterior faucets, and drain the remaining plumbing before the first frost each year.

Faucets and Fixtures: Hot Water Slow to Reach Fixtures

Water at some plumbing fixtures required an unusually long time for water to get hot. This is typically result of the plumbing fixture being located far from the water heater, often in a home with uninsulated hot water pipes. Correction possibilities may include some of the following:

- Insulating any accessible hot water pipes;

- Installation of a hot water re-circulation pump; and

- Installation of an on-demand hot water appliance.

You may wish to consult with a qualified plumbing contractor to discuss options and costs for improvement.

Limitations

General Plumbing Information

THE BULK OF YOUR PLUMBING SYSTEM IS INACCESSIBLE

Finished Surfaces, Building Mechanicals

Plumbing leaks are often impossible to detect unless they happen during the inspection. Finishes and stored items limited the locations and methods available to inspect distribution plumbing, waste and vent plumbing, and their associated connections, since they are mostly concealed behind finished surfaces. *Installed equipment, recent repairs, and environmental conditions obscure any history of problems or repairs.* Sellers normally make a good-faith attempt to fix problems, but sometimes new work will hide the signs that can tell us how well a system is performing.

Normally, only plumbing connections, plumbing supports, and shut-off systems can be directly observed, and normally this is only possible in utility rooms, basements, and crawlspaces. If any of these area were inaccessible at the time of your inspection, then those portions of your plumbing system were as well.

General Plumbing Information

INACTIVE PLUMBING SUPPLY

Inactive Carriage House Water Supply

Due to the engagement of a water supply shut-off valve at the property, the condition and function of the supply, waste, and vent plumbing systems down-stream from that shut-off were tested on the day of the inspection, and the functional flow of the plumbing in affected areas of the home could not be tested.

Regardless of whether the home had an active water supply, I did not operate any fuel shut-off handles without the client's agent indicating that they had gained direct permission from the seller or seller's agent and that they assumed the risks associated with activating a water supply.

Ask the seller to explain any concerns that lead to the current condition and to reestablish the supply if possible. Then inspect all components for the plumbing system that could not be accessed on the day of the inspection. There is an additional charge for a separate trip to return and inspect plumbing which was not functional on the day of the inspection.

General Plumbing Information

THE INSPECTION OF YOUR WATER SUPPLY SYSTEM

Unknown Material From the Municipal Branch to the Interior Wall of the House

I could not determine or describe the potability of your water supply, the condition of exterior supply systems, or the specific supply plumbing material from the public (or private) water source until the point where that supply material was visible.

Your report details the furthest-up-stream supply material which could be identified at the time of the inspection, which does not imply anything about the condition or material of the supply prior to that point. You should confirm the material and condition of your water supply with your municipal records keepers, a well contractor, or a licensed plumber.

Private water sources–such as tanks and wells–and private treatment systems–such as water filters and softeners–have specific manufacturer's installation instructions that I couldn't identify. You should contact a specialist for an evaluation of each system’s current condition and life expectancy details, as well as for operation and maintenance guidance.

Out of courtesy only, I noted the type and condition of readily accessible and visible parts of private water sources and treatment systems in order to look for affirmative indications that you should consult a contractor. Even if I did not mention a specific reason to consult a professional, I did not and do not discourage or advise you to forgo an inspection by a professional.

Water quality testing is always justified if you are concerned or unknowledgeable about the quality of your home's water. Furthermore, no interior portion of the plumbing was accessible, so the only indicators of the water quality and condition of the plumbing interior was the color, smell, and functional flow from the fixtures I could operate. I observed the water and tested the functional flow by operating at least two fixtures in each bathroom simultaneously; measurement of flow rates, water quality, and potability, however, is a technical and rigorous evaluation that requires an experienced plumber, so it was not included in the scope of your inspection.

General Plumbing Information

HOT WATER SYSTEM LIMITATIONS

Fixture Connections and Orientation Not Tested, Maintenance and Interiors Not Evaluated, Safety Features Not Tested, Unknown Conditions Prevented Safe Operation

Although I identified readily accessible indicators of the condition and function of your hot water system--like corrosion, smells, and flame color--only the exterior of the water heater is visible. The full evaluation of the heating components, fittings, and tank interior requires invasive, technically exhaustive measures that need to be carried out by an experienced plumber with access to the installation recommendations provided by your system's manufacturer.

Regardless of their age, water heaters require servicing, and they normally require it annually. If you have a gas powered private water heater, you should understand that I described the condition of the combustion components of your system separately from the water storage, plumbing, and safety components of your system. I described the presence of common safety devices; however, no safety features were tested on the day of the inspection, including the temperature/pressure relief (TPR) valve, isolation valve, drip pan, and expansion tank.

I did not measure and cannot verify the sufficiency of the hot water supply for a house of your size or for your needs, nor did I evaluate the calibration of the water heater temperature, nor flow consistency throughout the home, given that these measurements require specialized equipment and the expertise of a plumbing technician.

General Plumbing Information

YOUR WASTE DISCHARGE AND PLUMBING VENTILATION SYSTEM

Unknown Condition from the Last Visible Component to the Edge of the Property

I could not determine or describe the condition of your waste systems outside your home. Your report details the furthest-down-stream waste plumbing material which could be identified at the time of the inspection, which does not imply anything about the condition or material of the waste system past that point. You should confirm the material and condition of your waste plumbing with licensed plumber.

If you have a private sewage system, contact a specialist for an evaluation of the system's current condition and life expectancy details, as well as for operation and maintenance guidance.

Out of courtesy only, I noted the type and condition of readily accessible and visible parts of private waste disposal and treatment systems in order to look for affirmative indications that you should consult a contractor. Even if I did not mention a specific reason to consult a professional, I did not and do not discourage or advise you to forgo an inspection by a professional.

General Plumbing Information

COMMON FAUCET AND FIXTURE LIMITATIONS

Inaccessible Shower Pan and Walls

I operated all accessible valves normally used during the daily occupation of the home. That means that I did operate faucets and fixtures like sinks, showers, and toilets, but I not operate the main supply shut-off, nor the shut-off for any plumbing that supplies water for an appliance or fixture, nor any exterior hose bib shut-off–unless your agent confirmed that the seller or seller's agent consented and accepted the risks associated with activating a supply.

Although shower surrounds are part of the plumbing system (since they are designed to catch and direct water to a drain) I could not see the condition of the walls behind them or the sub-flooring around them unless there was an access panel I could readily remove.

Specialty fixtures–such as steam showers, whirlpool fixtures, and bubble tubs–have specific manufacturer's requirements for safe installation which I couldn't identify without a copy of the manufacturer's installation instructions, to which I did not have access. If any bedits were present, they were untested for obvious reasons.

Solutions

9.2.1 Water Supply System

Recommended Change

DISSIMILAR METAL CONNECTIONS IN THE DISTRIBUTION PLUMBING

Visibly Corroded Connections, Dissimilar Fittings, Concealed Plumbing Connections

Consult a plumber for evaluation of the connections between dissimilar metals in the distribution plumbing, as well as the condition of the downstream plumbing and appliances. Plumbing replacement, the installation of dielectric unions, and appliance repair may be necessary.

Galvanic corrosion occurs when dissimilar metals are in contact with each other in the presence of water, and this corrosion can damage materials at the site of the connection, downstream from the connection, and at appliances downstream.

9.2.2 Water Supply System

Recommended Change

LEAKY WATER DISTRIBUTION PLUMBING COMPONENT

Fitting

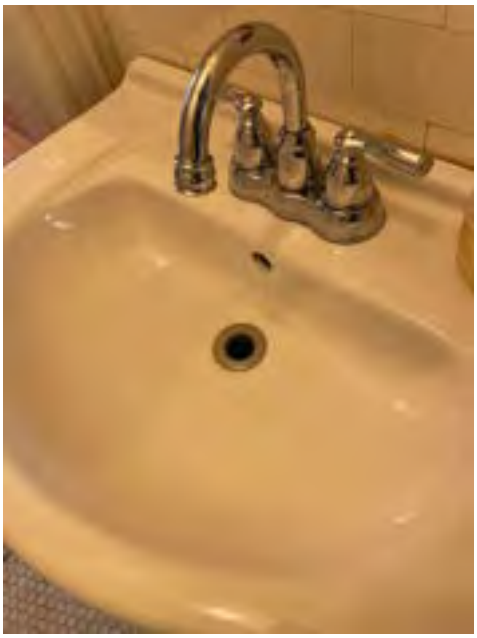
Repair the leaky fixture supply connection, as well as any damaged materials and finishes.

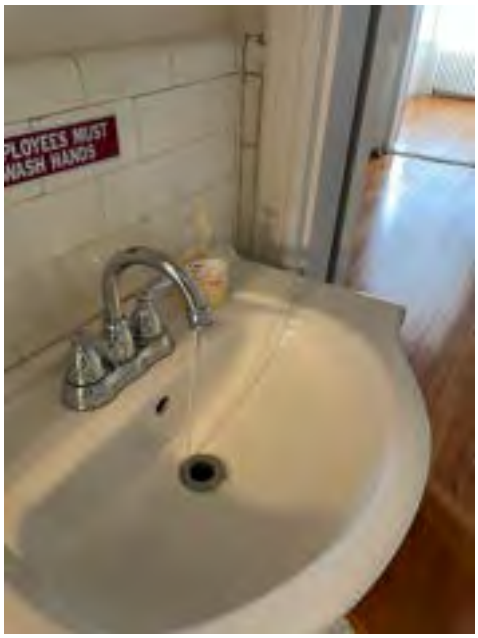
9.2.3 Water Supply System

Recommended Change

LOW WATER PRESSURE AT MULTIPLE SIMULTANEOUSLY OPERATED FIXTURES

Consult a plumber to evaluate the low water pressure that occurs when more than one fixture on the plumbing branch are operated simultaneously and determine what correction is necessary.





9.3.1 Hot Water System

Recommended Change

AGED WATER HEATER WITH FLAWED INSTALLATION

Damaged, Corroded, Old, Missing Expansion Tank, Excessive Exhaust Spillage, Damaged Isolation Valve, Over 15 Years of Age, Missing Drip Pan

Replace the aged water heater that displays numerous installation and performance flaws.

Given the age and various installation flaws, the most cost effective repair strategy will likely be replacement.

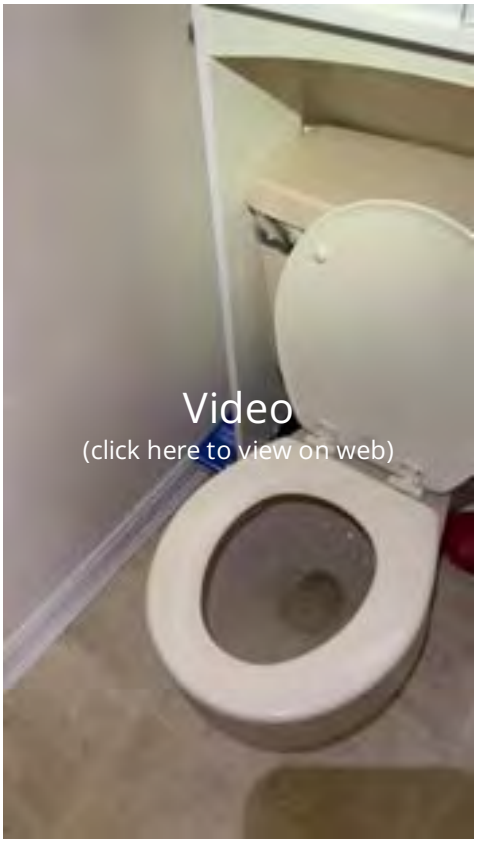
9.5.1 Faucets and Fixtures

Recommended Change

LOUD FIXTURE

2ND FLOOR HALL BATHROOM

Repair or replace the loud water fixture to prevent plumbing leaks.



9.5.2 Faucets and Fixtures

Recommended Change

LEAKY WATER SUPPLY CONNECTION AT A FIXTURE

3RD FLOOR BATHROOM

Stem, Shower Head, Faucet

Repair and seal the leaky connection between the water supply and the fixture; repair any materials or finishes that have been damaged by the leak.

9.5.3 Faucets and Fixtures

Normal Maintenance

DETERIORATED CAULK

3RD FLOOR HALL BATHROOM

Remove and replace all the deteriorated caulk around the bathtub. Caulk should be applied and allowed to dry while bathtub is full of water

10: COMBUSTION EQUIPMENT

Information

General Combustion Systems Information: Things You Need to Know About Combustion in Your Home

Combustion is a chemical reaction that uses fuel and oxygen to produce heat and gases. Those gases and the fuel are something we tolerate since we want the heat to keep us warm and make our water comfortable to use. Even though we have systems that make using combustion easy in our home, you need to know one thing:

Combustion fuels and combustion products are both toxic and dangerous.

Fuels that are delivered and stored behind metal plumbing until the moment they are used have a distinctively stinky and pervasive smell. Leaks smell sulfury/chemically, and they mean you should leave the house immediately to call the appropriate emergency number.

An insufficient combustion supply and chloride-releasing chemicals stored in a combustion supply (like bleach, paint thinner, or snow salt) can damage your gas appliances and cause them to produce hazardous gases, such as carbon monoxide--which is invisible, odorless, tasteless.

Combustion products can fail to exit the home due to damaged flues and chimneys and low air pressure in the home. **This is called "back-drafting" and has typically clear signs in and around your gas appliances, such as soot, condensation, corrosion, or allergy-like symptoms in occupants**.

Your home's wood-burning and gas-burning features have distinct specific needs, but the fact they are dangerous chemical reactions that need to exhaust properly means that many of their concerns are the same.

I was able to evaluate the basics of your combustion systems. I can advise you of definite and identifiable risks. Still, you should consult a plumber if you have a fuel supply and CSIA-certified technician every year as part of a homeowner's routine maintenance plan, as well as part of your plans for closing on your home--for more information about your combustion systems, for a complete evaluation of your combustion systems, and EVERY repair.

General Combustion Systems Information: Fuel Type
Public, Natural Gas

General Combustion Systems Information: Ignition Type
Pilot Light

General Combustion Systems Information: Carbon Monoxide Detectors

Combined with Smoke Detectors

Unlike smoke, carbon monoxide stays near the floor and is harder to detect if the device is near the ceiling, so I recommend that all homes with combustion powered appliances or fireplaces supplement their smoke detectors with independently installed carbon monoxide detectors.

The standard life span of a carbon monoxide detector is 3-5 years, and they are such an important safety feature, that I recommend that all homeowners replace carbon monoxide detectors regardless of their age.

Contact your local fire department for their recommendations for carbon monoxide detector installation in your municipality. Recommendations normally direct homeowners to install detectors no higher than 3 feet off the floor; at least one detector on every level of the home, within 10 feet of the garage, and 15 feet away from any gas powered equipment (including furnaces, stoves, etc); but away from windows or drafty areas, and away from humid or moist areas (bathrooms, etc).

Fuel Supply System: Main Shut-off Location

At the Meter

Fuel Supply System: Minor Odor Near the Gas Meter

Some occasional gas odor near the meter is normal. The gas system contains a pressure regulator that is designed to release gas into the outdoor air when fluctuating pressure in the pipe rises slightly above a certain preset level.

Contact the gas company if there is a persistent odor, if members of the household display allergy-like symptoms, or if you are otherwise bothered or concerned.

Fuel Supply System: Service Entrance Material

Black Iron

Fuel Supply System: Interior Service Material

Black Iron

The states of Maryland and Virginia advise that you consult a licensed master electrician to review the bonding and grounding of the interior gas plumbing service material, especially if that material is corrugated stainless steel tubing also known as "CSST".

CSST has a number of special installation requirements that can vary by individual installation, installation age, manufacturer, and jurisdiction, so the inspection of CSST was not in the scope of your home inspection. Manufacturers believe that this product is safer if properly bonded and grounded as required by the manufacturers installation instructions. Proper bonding and grounding of the product should be determined by a contractor licensed to perform the work in the applicable locality.

Appliance Combustion Supply and Exhaust: Combustion Supply Location

Internal Unoccupied Space

Do NOT sleep in any room that serves as the combustion for a gas appliance. Even when your gas appliances are operating correctly, pressure differentials in the home can cause back-drafting, which is an extreme carbon monoxide risk.

Do NOT store household cleaners, paint, paint thinner, salt, or any chloride-releasing product within your combustion supply. Unfortunately, that often means that you cannot have your laundry in the same room as your gas appliances--with the exception of a gas dryer.

Appliance Combustion Supply and Exhaust: Aggregate Input Rate of Gas Appliances with Internal Combustion Supplies

363000 BTU/hr

Combustion appliances require 50 cubic feet of available combustion supply per 1000 BTU/h aggregate input for efficient and safe performance.

Appliance Combustion Supply and Exhaust: Appliance Exhaust Equipment

Exhaust Draft Hood

Appliance Combustion Supply and Exhaust: Visible Exhaust Vent Material

Double-walled Metal

Wood Burning Fireplace and Flue: Decorative Fireplace

The fireplace is currently decorative feature only due to modifications at the top of the chimney, in the chimney liner, or in the firebox. Consult a fireplace contractor if you wish to use this feature as a wood burning fireplace.

Wood Burning Fireplace and Flue: Firebox Material and Features
Masonry, Andirons

Wood Burning Fireplace and Flue: Hearth
Fire Brick, Ceramic Tile

Wood Burning Fireplace and Flue: Damper Location
Unknown

Wood Burning Fireplace and Flue: Chimney Liner
Unknown

Gas Burning Fireplace: Installation Type
Conventional Fireplace Conversion

Gas Burning Fireplace: Ventilation
Vented Gas Logs

Gas Burning Fireplace: Ignition Controls
Manually Operated

Flue and Chimney Exterior: Chimney Location and Style
Ridge, Parapet Wall

Flue and Chimney Exterior: Chimney and Flue Cladding

Brick



Limitations

General Combustion Systems Information

FUEL SUPPLY SYSTEMS WERE NOT EXHAUSTIVELY TESTED

The condition of the fuel supply system was not part of your inspection, with the exception of the readily accessible features, such as smells present in the air, signs of leaks, visible deterioration or damage to the supply system, and the functionality of fuel-powered appliances. For my purposes, "Fuel" means natural gas, liquid petroleum, propane, kerosene, fuel oil, wood, wood pellets, or any other fuel used for the purposes of combustion related to the operation of appliances at the property.

I did not execute a full inspection of CSST present at the property. CSST has a number of special installation requirements that can vary by individual installation, installation age, manufacturer, and jurisdiction. *Manufacturers believe that this product is safer if properly bonded and grounded as required by the manufacturers installation instructions. Proper bonding and grounding of the product should be determined by a contractor licensed master electrician to perform the work in the Commonwealth of Virginia or the state of Maryland, whichsoever applies.*

Tanks for fuel--including natural gas, propane, kerosene, and oil--were not within the scope of your inspection. You should have the tank location determined, pressure measured, and condition inspected by a qualified contractor

Ask your agent to confirm the terms that apply to and tank supplying fuel to this property. Tanks may be leased or privately owned, and if the lease and ownership do not transfer with ownership of the property, new lease arrangements or contracts from suppliers must be made at the time of sale.

General Combustion Systems Information

INACCESSIBLE COMBUSTION SYSTEM INTERIORS

Combustion system components have specific manufacturer's requirements for safe installation, and I can't identify them all. Furthermore, I was only able to see a small portion of your chimney and flue interiors, and I did not operate any wood burning installations, flue or vent system, fire doors or screens, seals or gaskets, or mantels. I did not measure and cannot verify the sufficiency of the exhaust system.

Out of courtesy only, I noted the type and condition of readily accessible and visible parts of the combustion systems in order to look for affirmative indications that you should consult a contractor. Even if did not mention a specific reason to consult a professional, I did not and do not discourage or advice you to forego an inspection by a CSIA professional.

To more accurately determine the safety and condition of the fireplace, consult a contractor certified by the Chimney Safety Institute of America (CSIA) to inspect, sweep, and further evaluate the interior of the combustion system flues, chimneys, and both wood-burning and gas-burning fireplace equipment--*immediately* and every year as part of a homeowner's routine maintenance plan.

General Combustion Systems Information

UNABLE TO TEST CARBON MONOXIDE DETECTORS

During your home inspection, carbon monoxide detectors could not be tested. Long term carbon monoxide concentrations are an acute health hazard, but short term exposure is common and often considered less of a health risk.

Since ignition for gas burning appliances--including gas ranges-- create large, initial emission of carbon monoxide during start up, and since these appliances turn on-and-off frequently, standard carbon monoxide detectors measure long-term concentrations of carbon monoxide. "Long-term" can indicate a period of time ranging anywhere between hours, days, weeks, and months.

Due to the normal time limitation of a home inspection and my inability to produce intentionally carbon monoxide without damaging materials within the home, I did not test any carbon monoxide detectors for their capability to detect carbon monoxide--including the detectors that are installed as part of a smoke detector.

Solutions

10.3.1 Appliance Combustion Supply and Exhaust

Recommended Change

INDICATIONS OF METAL FLUE CONDENSATION

Accumulation of Metal Flakes and Rust, Rust Within the Gas Appliance Under the Flue, Rust Present on the Flue

Upgrade the metal flue vent that displays signs of condensation.

Consult a CSIA-certified technician to determine if modifications need to be made to the vent size, type, configuration, or exterior termination fittings.

Moisture can cause deterioration of the flue, as well as cause the components of the associated gas appliances to age prematurely. Normally, moisture condenses on single-walled metal exhaust flues that are incorrectly sized or pass through an unconditioned space.

10.3.2 Appliance Combustion Supply and Exhaust

Recommended Change

DETERIORATED FIREBOX POINTING

Replace the deteriorated firebox masonry pointing with a fire resistant mortar.

10.6.1 Flue and Chimney Exterior

Recommended Change

INEFFECTIVE FLUE CAP

Damaged

Repair or replace the crown and flue cap so that the interior of the chimney is protected from weather and animals and to reduce the likelihood that sparks can escape the flue.

10.6.2 Flue and Chimney Exterior

Recommended Change

DAMAGED FLUE LINER

Collapsed Weathervane

Repair the damaged flue liner and inspect the combustion systems related to the chimney for the presence of masonry debris or damage due to weather and animals.

10.6.3 Flue and Chimney Exterior

Solution Needed

CHIMNEY DETERIORATION IN THE ATTIC

Consult a CSIA-certified chimney repair contractor for evaluation of the flue and to repair the deteriorated chimney mortar and bricks in the attic before use of the chimney. Use of the current flue and chimney is a fire hazard.

11: MAIN HOUSE HEATING AND COOLING

Information

General HVAC Information: Things You Need to Know About Heating and Cooling Your Home

Heating and cooling systems are the most critical and sophisticated mechanical systems in your house. They use clever material science and thermodynamic engineering to add or remove heat from each room, on-demand, regardless of the weather, to your exact specifications. They do this when you are home, away, awake, or even asleep. There is one big thing you need to know about these high demand systems:

Heating and cooling systems are the most complex system in your home, so they are also the most challenging to maintain.

On the one hand, a host of fuels can be used to create heat, and your HVAC equipment includes various safety features tailored to your fuel type. It will have demands specific to your kind of system. On the other hand, all cooling systems dissipate the heat collected by the system inside in basically the same way. So your home requires complex maintenance of equipment on both the interior and exterior.

Your distribution system should be specifically designed to direct heating and cooling to every room of the house, both efficiently and adequately. This takes the form of an active forced-air and passive air-return strategy, concealed almost entirely behind your walls, which requires you to make minor, seasonal changes in your system.

Aside from these changes, **your experience of the system will almost always be limited to your interactions with the thermostat and changing the filter**, if there is one. No home inspector can guarantee how effective your HVAC is or how well it has been maintained--aside from telling you that the system is installed typically and effectively changing the air temperature in your home.

Proper HVAC maintenance requires an ongoing relationship with a skilled technician you trust.

Have regular, scheduled maintenance check-ups, and contact your technician if there are any changes in your HVAC system's sound, smell, or performance.

General HVAC Information: Heating Energy Source and Medium
Radiant, Natural Gas

General HVAC Information: Heating Configuration and System Type
Central, Hydronic Boiler

General HVAC Information: Cooling Type and Configuration
Independent Cooling System, Individual Units/Space Cooling

General HVAC Information: Functional Cooling System

At the time of the inspection, the cooling system operated using standard controls. The performance of the equipment and the temperature differential noted in the report are the indicators of the functionality of the system as a whole; the technical functionality of specific parts individually--like the compressor, the condenser, the fan, or other components--is not within the scope of the inspection.

General HVAC Information: Noticeable Temperature Gradient

Although home inspections don't include a scientific confirmation of temperature distribution, I want to point out that on the day of the inspection there was a distinct temperature difference between levels of the home.

This is called a temperature gradient, and *temperature gradients always exist in homes*--upper floors are always warmer than lower floors; homes with open staircases naturally allow warm and cool air to move more easily; homes originally designed for heating often have cooling systems retro-fitted onto them without modifying ductwork; and more effectively insulated rooms keep their temperature more consistently.

There are various options available to help you increase the consistency of the temperature throughout the house. You could consider installing dampers, ceiling fans, or even supplemental heating and cooling systems, but you may already have dampers or register covers that you can learn to use advantageously. Consult an HVAC specialist for more information.

Radiant Heating: Things You Need to Know About Radiant Heating

Forced air systems like furnaces and heat pumps change the temperature of the air and that air conducts heat to you at the temperature you set on your thermostat, which is normally in the 70s and not cozy at all. You have a radiant system, and which is the most comfortable form of domestic heating; so congratulations! I'm super jealous.

Your radiant system is so comfortable because it radiates heat.

The temperature that your system radiates is based on the temperature within the radiators. Water radiators aren't hot enough to hurt when you touch them. Steam radiators aren't hot enough to cause things in the house to burn. Electric systems can both burn you and can cause things in your house to catch fire, so you need to be very careful around them.

No matter what medium is in your radiators, your system is above your pay grade. The normal boiler is a sophisticated combustion system with a pressurized plumbing system attached. Don't tinker with it. Maintain a service contract with an HVAC technician, and have the boiler serviced every year when they turn it on for the season.

Radiant Heating: Radiator Type
Upright Radiators

Radiant Heating: Heat Transfer Type
Hydronic

Radiant Heating: Brand & Data Tag
Teledyne

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

Radiant Heating: Equipment Age
26 Years

Radiant Heating: Hydronic System Pressure and Gauge Photo

5- 15 psi

Although the pressure in your system should be calculated and modified by a licensed HVAC technician with experience in hydronic boilers, the normal pressure in a water boiler system is a value measured in pounds per square inch (psi) and it can be calculated by multiplying the height of the highest point in the radiant plumbing above the radiator by .45.

Radiant Heating: Hydronic System Temperate and Gauge Photo

60- 80

The temperature in your system will effect the pressure and should be calculated and modified by a licensed HVAC technician with experience in hydronic boilers, however the normal temperature of a functional system is between 160 degrees and 185 degrees. This is not normally hot enough to ignite combustibles or burn the skin form brief contact.

Radiant Heating: Circulation Features

Two Pipe

One-Piece HVAC Equipment: Things You Need to Know About One-Piece HVAC Systems

The exterior HVAC equipment is the entirety of the mechanical portion of your HVAC system, which saves space and makes maintenance easy over other heating and cooling options. For condo owners, this is the only piece of equipment outside their home for which they are responsible.

No air goes into or comes out of the home from the system. Ductwork carries the air from within your home through the system and back, but no new air is added to your home. The ducts penetrate the building, and these penetrations need to be well-sealed with flashing or siding to prevent leaks.

The ducts themselves should be properly insulated and maintained, which is something you should discuss with your HVAC contractor.

One-Piece HVAC Equipment:
Location

Roof

One-Piece HVAC Equipment: Brand & Data Tag

Carrier

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

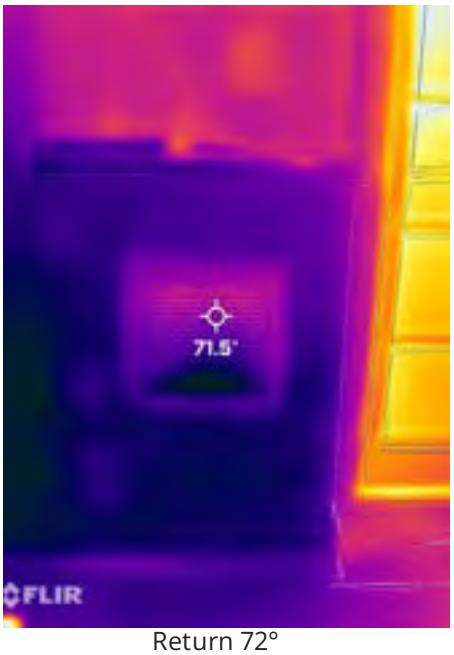
One-Piece HVAC Equipment:
Equipment Age

10 Years

One-Piece HVAC Equipment: Temperature Differential

3 Degrees

The temperature differential between the air entering the HVAC system and the return where it exits the HVAC system reflects the effectiveness of the heating and cooling. The temperature differential created by normally operating HVAC systems is between 14° and 22°.



Return 72°

Register 69°

Drainage and Controls: Things You Need to Know About the Drainage and Controls for Your HVAC System

Heating and cooling the air in your home creates at least one cold surface inside the equipment, and condensation forms on cold surfaces. Your HVAC system has a built-in drainage system that collects and discharges this condensation to protect the equipment and finishes in your home.

Redundant overflow protection is present in high-end systems. Sometimes it is just a second condensation discharge pipe, but often it will be an alarm or a switch that shuts your system off if it detects excessive moisture. These switches are only one of the many safety, service, and cut-off switches installed as part of your equipment.

If you have a maintenance shut-off switch in your utility closet, you should definitely find a way to clearly mark it as a "kill" switch so that it can easily be identified and avoided.

The most important switch for your HVAC system is your thermostat, and the location effects how well the individual rooms are heated and cooled. Relocating your thermostat to important rooms in your house or installing a smart, coordinated thermostatic system is likely to help you control your home's temperature more comfortably.

Drainage and Controls: Interior Equipment Orientation

Horizontal Draft

Drainage and Controls: Primary Condensation Drain Termination

Cooling System Discharge Pipe, Unknown

Drainage and Controls: Secondary Condensation Overflow Protection

None Visible

Drainage and Controls: Maintenance Shut-Off Switch

A/C Service Disconnect

Note the presence of the kill switch. If the HVAC system is not functioning, check that all switches are in the "on" position before any other attempts at repairs or calls to repairmen are made.

Drainage and Controls: Thermostat Types and Location

Electronic, Multiple

Forced Air Distribution: Things You Need to Know About Forced Air Distribution

Distributing air around your home starts when unconditioned air is pulled into the HVAC system through gaps under doors and return ducts, so that it can be replaced with heated or cooled air. That unconditioned air passes through a filter that protect your equipment from dust and debris.

Frequently change these filters to reduce the monthly and lifetime costs of operating your system.

Your HVAC filter isn't a great tool for managing dust and allergens in the air since your HVAC system doesn't pull hard enough to pick up particles that have landed on the surfaces in your house. If you would like to manage the dust and allergens in your home, thoroughly clean all of the finished surfaces as well as the interiors of your return ductwork.

Regardless of your HVAC system, hot air tends to rise and cool air tends to fall; some systems have dampers installed on the ducts so that you can direct cool air up and warm air down. In individual rooms, ceiling fans will mix the air and give it a more even temperature.

Forced Air Distribution: Filter Orientation
Lateral Duct Slot

Forced Air Distribution: Installed Filter Type
Disposable

Forced Air Distribution: Filter Size
Multiple Sizes

Forced Air Distribution: Duct Type
Metal

All homes can benefit from increased air quality from a professional cleaning of the HVAC ductwork to clear out the dust, debris, and smells of the previous owners.

Ductless Heat Pump Condenser and Refrigerant Line : Condenser Location
Exterior South

Ductless Heat Pump Condenser and Refrigerant Line : Brand & Data Tag
Sanyo

Ductless Heat Pump Condenser and Refrigerant Line : Condenser Age
11 Years

Ductless Heat Pump: Things You Need to Know About Ductless Heat Pumps

Your refrigerator collects heat from the air inside and pumps it out--that is why the air around your fridge is warm. A/c works the same way; it refrigerates your home. A heat pump, however, is an a/c system that can also pump heat in that it collects outside. Some heat pumps have electric heating coils inside that activate when there isn't enough heat outside to collect--because it is too cold, and those heat pumps can heat when it is excessively cold outside. Here's the thing you need to know about ductless heat pumps is:

Ductless heat pumps cannot heat effectively during extreme cold.

When ductless heat pumps are used to supplement HVAC systems that are permanently installed in a house, they help increase the conditioned air distribution consistency. You would use a ductless heat pump supplementarily when there is an addition added to the home which would have caused prohibitively expensive modifications to bring conditioned air fro the original system into the addition.

In areas like the Mid-Atlantic, ductless heat pumps are not reliable as a permanent primary heating source for a whole home during extreme cold.

Ductless Heat Pump: Type

Electric/Refrigerant

Ductless Heat Pump: Brand & Data Tag

Sanyo

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

Ductless Heat Pump: Equipment Age

11 Years

Ductless Heat Pump: Temperature Differential

0 Degrees

The temperature differential between the air entering the HVAC system and the return where it exits the HVAC system reflects the effectiveness of the heating and cooling. The temperature differential created by normally operating HVAC systems is between 14° and 22°.

Rear Basement A/C: Things You Need to Know About Window Air Conditioners

An a/c system is made of two parts. In homes with central air, the condenser is a big box that sits outside, and the a/c coils are inside near the heating equipment. Your air conditioner contains both parts of an a/c system in one box, resting in a penetration in the exterior wall. The thing you need to know about your unit is:

No air goes into or comes out of the home here.

Through clever material science, the a/c coils collect heat from the air in the room and transfers it to a refrigerant. These coils are delicate, which is why we use filters to protect them from dust and debris. **You should clean your filter regularly.**

A small insulated pipe circulates the refrigerant to the outside portion of your wall unit, and that circulating refrigerant is how heat exits the home. This process creates condensation, which is why you have a drainage pipe that leaks water outside your unit.

For condo owners, this is the only piece of equipment outside their home for which they are responsible, but all homeowners should be mindful that their condenser is installed on a level, stable platform and that the drainage line is functional by looking at your unit from the outside for signs that it is discharging condensation.

The area around your conditioner penetration through the wall must be sealed around these unit to prevent energy loss and moisture intrusion.

If you notice a draft around your air conditioner, or if you see signs of condensation, you may need to adjust the orientation of the unit and install a layer of sealant.

Rear Basement A/C: Type

Electric/Refrigerant

Rear Basement A/C: Brand & Data Tag

Kenmore

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

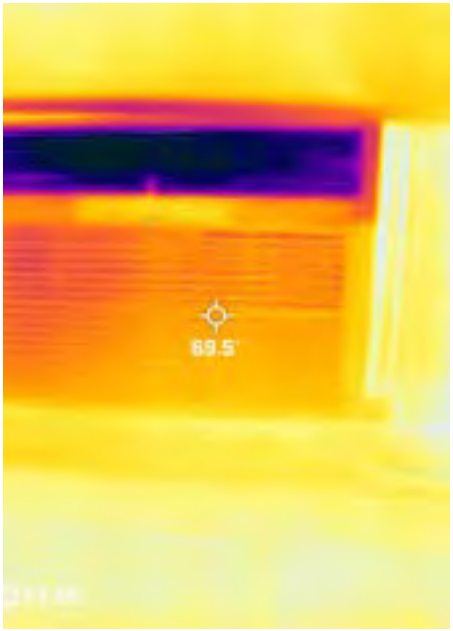
Rear Basement A/C: Equipment Age

12 Years

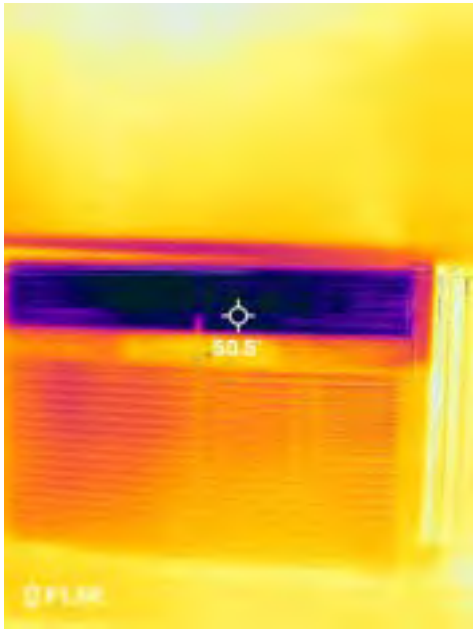
Rear Basement A/C: Temperature Differential

19 Degrees

The temperature differential between the air entering the HVAC system and the return where it exits the HVAC system reflects the effectiveness of the heating and cooling. The temperature differential created by normally operating HVAC systems is between 14° and 22°.



Return 70°



Register 51°

Front Basement AC: Type

Electric/Refrigerant

Entry Level AC: Type

Electric/Refrigerant

Entry Level AC: Brand & Data Tag

LG

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

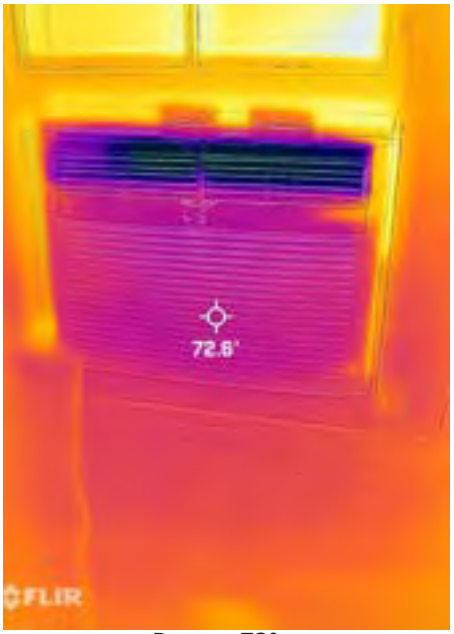
Entry Level AC: Indeterminate Age

Data tags for units produced by this manufacturer do not encode information regarding the production date of the equipment, so although the model and serial numbers were accessible the age could not be determined. If I notate an age for this appliance, this is a best guess based upon contextual clues in the surrounding finishes and equipment.

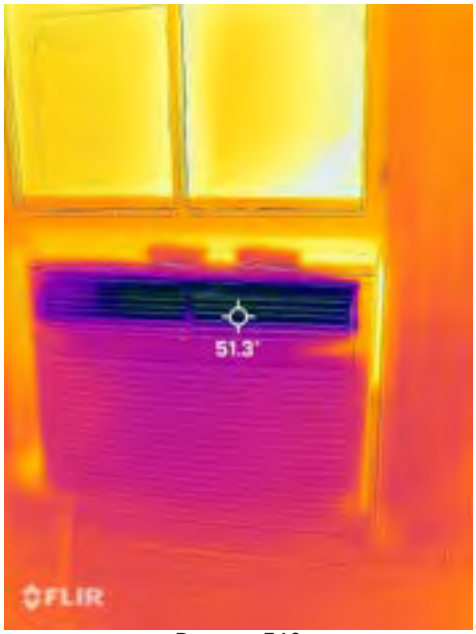
Entry Level AC: Temperature Differential

22 Degrees

The temperature differential between the air entering the HVAC system and the return where it exits the HVAC system reflects the effectiveness of the heating and cooling. The temperature differential created by normally operating HVAC systems is between 14° and 22°.



Return 73°



Return 51°

Upper Level Main House A/C: Type

Electric/Refrigerant

Upper Level Main House A/C: No Visible Data Tag

The manufacturer's data tag was not visible and may be located in a position that is obscured when the appliance is installed. The model and serial numbers were not accessible, so the age could not be determined.

Upper Level Main House A/C: Brand & Data Tag

GE

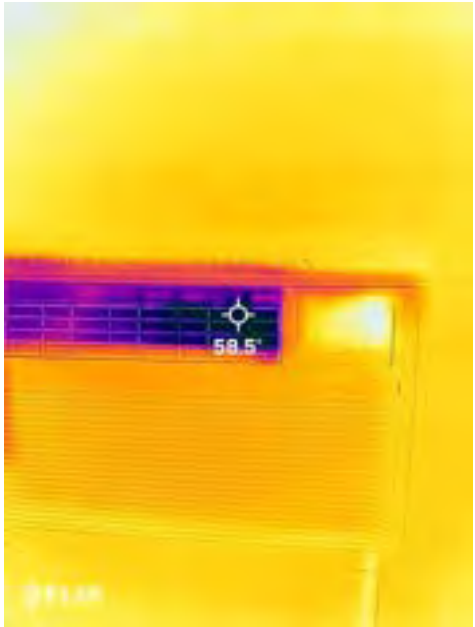
Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

Upper Level Main House A/C: Temperature Differential

14 Degrees

The temperature differential between the air entering the HVAC system and the return where it exits the HVAC system reflects the effectiveness of the heating and cooling. The temperature differential created by normally operating HVAC systems is between 14° and 22°.

Return 73°



Register 59°

Upper Level Addition A/C: Type

Electric/Refrigerant

Upper Level Addition A/C: Brand & Data Tag

LG

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

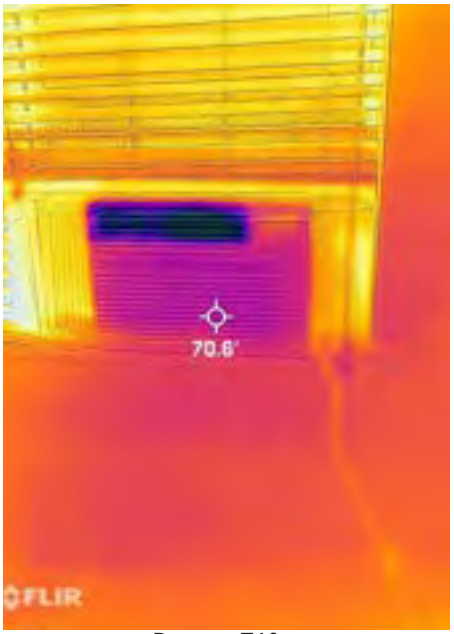
Upper Level Addition A/C: Indeterminate Age

Data tags for units produced by this manufacturer do not encode information regarding the production date of the equipment, so although the model and serial numbers were accessible the age could not be determined. If I notate an age for this appliance, this is a best guess based upon contextual clues in the surrounding finishes and equipment.

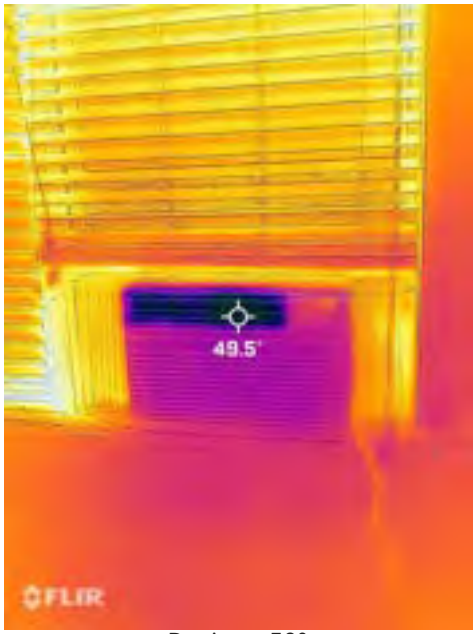
Upper Level Addition A/C: Temperature Differential

21 Degrees

The temperature differential between the air entering the HVAC system and the return where it exits the HVAC system reflects the effectiveness of the heating and cooling. The temperature differential created by normally operating HVAC systems is between 14° and 22°.



Return 71°



Register 50°

Upper Level Bathroom AC: Type

Electric/Refrigerant

Upper Level Bathroom AC: No Visible Data Tag

The manufacturer's data tag was not visible and may be located in a position that is obscured when the appliance is installed. The model and serial numbers were not accessible, so the age could not be determined.

Upper Level Bathroom AC: Brand & Data Tag

GE

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

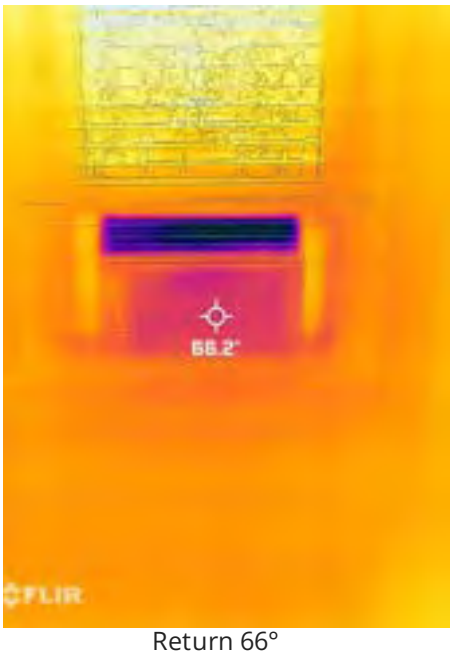
Upper Level Bathroom AC: Indeterminate Age

Data tags for units produced by this manufacturer do not encode information regarding the production date of the equipment, so although the model and serial numbers were accessible the age could not be determined. If I notate an age for this appliance, this is a best guess based upon contextual clues in the surrounding finishes and equipment.

Upper Level Bathroom AC: Temperature Differential

16 Degrees

The temperature differential between the air entering the HVAC system and the return where it exits the HVAC system reflects the effectiveness of the heating and cooling. The temperature differential created by normally operating HVAC systems is between 14° and 22°.



Return 66°

Register 50°

Supplemental Heating and Cooling: Things You Need to Know About Supplemental Heating and Cooling

Space heating and cooling equipment normally operates simultaneously as the main HVAC systems as a way to either improve the performance of those systems or to provide heating and cooling to an otherwise unserviced area.

Although their presence implies that the current owner believes that the home is not consistently serviced by central systems alone, the continued use of these supplemental systems may be the most efficient way to heat and cool the home.

If you wish to discontinue the use of this equipment, consult an HVAC specialist to evaluate the air distribution system, central HVAC equipment age and size, the home's insulation, and you home's heating/cooling needs.

Supplemental Heating and Cooling: Supplemental Cooling

Ceiling Fan

Supplemental Heating and Cooling: Functional

The space heating and space cooling present in the home was operated on the day of the inspection using normal controls.

Limitations

General HVAC Information

MANUFACTURER'S INSTALLATION GUIDANCE WAS NOT EVALUATED

Although the I looked for common solutions that can be used to improve the safety and function of normal HVAC systems, I could not confirm the compliance of your equipment with installation recommendations provided by the manufacturer for your specific model of equipment. A full, technically exhaustive evaluation of your HVAC system's installation requires an experienced HVAC contractor and access to a copy of the installation recommendations provided by the manufacturer.

General HVAC Information

HEAT EXCHANGER AND A/C COILS WERE NOT ACCESSIBLE

Comprehensive evaluations of the combustion chamber, heat exchangers, and the a/c evaporator coils requires invasive, technically exhaustive measures that exceed the scope of the inspection. I was able to identify readily accessible indicators of the condition of these inaccessible components--like visible corrosion, flame color, smells, and temperature differentials--however, you should consult a qualified HVAC technician for an evaluation and service of the system.

General HVAC Information

AIR DISTRIBUTION AND AIR QUALITY WERE NOT INSPECTED

Individuals have their own idea of what constitutes adequate performance of the HVAC system. Neither the consistency of air/temperature distribution throughout the home, nor the presence of temperature gradients, nor the quality of the air after it exits the HVAC system was tested on the day of the inspection, given that these measurements require specialized equipment and the expertise of an HVAC technician.

I could only see if air returns were installed in the appropriate locations, if heating and cooling supplies were present in each room, and if the HVAC systems created a standard temperature differential at a representative pair of returns and supplies.

Temperature gradients existed at the home on the day of the inspection, and with the exception of drastic and noticeable gradients, the gradients were neither measured nor commented upon. Gradients will exist after you occupy the home because temperature gradients always exist--as a basic fact of physics. Upper floors are warmer than lower floors, and rooms with more effective insulation keep their temperature more consistently than neighboring rooms.

Although I was able to smell the air for basic indicators of air quality problems, air quality testing is a technical and rigorous measurement that requires expertise. Normal home maintenance routines include cleaning of the HVAC distribution equipment, and air quality testing is always justified if you are concerned or unknowledgeable about the quality of your home's air.

Drainage and Controls

DISCHARGE UNCONFIRMED

I was unable to confirm where the condensate pump discharges. The condensate pump did not operate during my home inspection, and forcing it to discharge is beyond the scope of the inspection. It should discharge outside, onto the ground where the grade directs the water away from the foundation.

Front Basement AC

INOPERABLE

Inactive Power Supply

The HVAC equipment could not be safely operated on the day of the inspection, so this portion of the HVAC system and its associated controls, drainage, and distribution could not be tested.

Supplemental Heating and Cooling

SUPPLEMENTAL HEATING AND COOLING CALIBRATION AND DISTRIBUTION EFFECT NOT EVALUATED

Supplemental heating and cooling equipment were present at the home at the time of the inspection. I did not measure the calibration of the equipment to any thermostat, and I did not evaluate the resultant effect of the equipment on other, currently installed HVAC equipment.

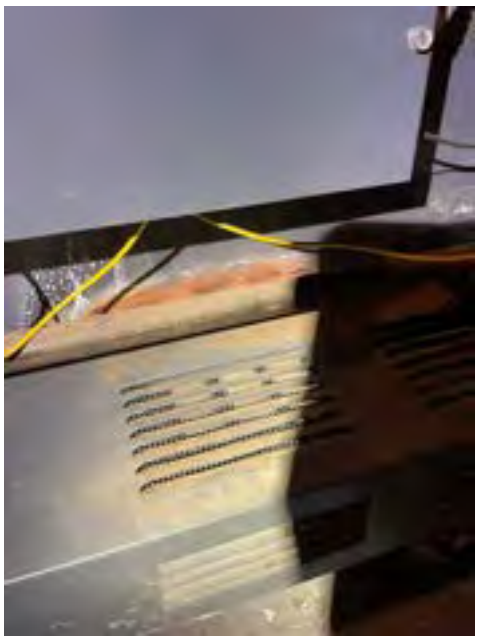
Solutions

11.2.1 Radiant Heating

Solution Needed

DAMAGED OR CORRODED BOILER EXTERIOR

Repair or replace the damaged or corroded boiler. It is likely that this equipment has exceeded its useful life due to prolonged deferred maintenance and excessive flue corrosion.



11.3.1 One-Piece HVAC Equipment

Solution Needed

INCORRECT ONE-PIECE HVAC SYSTEM TEMPERATURE DIFFERENTIAL

Insufficient Temperature Differential

Repair or replace the one-piece HVAC system that created an incorrect temperature differential.

Although the system went through start up procedures and the blower ran, the temperature of the supply air measured at the registers not within operational norms.

A functional HVAC system will create a difference between the temperature of the air where is enters the return duct and the temperature of the air where is exits the supply ducts. That differential should be at least 14 degrees.

11.4.1 Drainage and Controls

Normal Maintenance

INADVISABLE THERMOSTAT PLACEMENT

Too Close to a Window, In a Common Area, Excluding Upper Levels of the Home, Excluding Lower Levels of the Home, Independent Thermostats, Excluding Exterior Rooms, On an Exterior Wall

Install a smart thermostatic system with several coordinated temperature gauges on all levels of the home or move the thermostat to a position near the center of the living space--preferably close to HVAC returns or the interior wall of the primary bedroom.

The current thermostat orientation will cause inefficient performance of the heating and cooling systems.

Thermostats located on interior walls, away from windows, and away from registers are generally better protected from temperature fluctuations and prevent HVAC system over-activity. Thermostats in bedrooms--preferably in the primary suite--maintain a more comfortable temperature in bedrooms bedroom at night. Relocating your thermostats will allow you to control the temperature in the home more consistently, comfortably, and effectively.

11.7.1 Ductless Heat Pump

Solution Needed

INCORRECT DUCTLESS HEAT PUMP TEMPERATURE DIFFERENTIAL

Insufficient Temperature Differential

Repair or replace the ductless heat pump that is not creating the appropriate temperature differential.

Although the heat pump went through start up procedures and the blower ran, the temperature of the supply air measured at the registers not within operational norms.

A heat pump system is normally considered functional when the operation creates a difference between the temperature of the air where is enters the return duct and the temperature of the air where is exits the supply ducts and when that differential should be at least 14 degrees and should not exceed 22 degrees.

12: INSULATION AND VENTILATION

Information

Insulation and Ventilation General Information: Things You Need to Know About Insulation and Ventilation

HVAC systems heat and cool the air inside our homes to protect us from the variations in the environment outside. Unfortunately, heat quickly leaves the thermal envelope of a home during the winter, and during the summer, it enters just as quickly. An HVAC system would be costly if it had to keep up with the speed that heat naturally travels, so we install insulation to slow down the heat as it leaves or enters your house. The thing you need to know is that:

Warm air usually is moist, so insulation passively accumulates humidity.

Humid insulation encourages biological growth and can cause the structure and finished surfaces in a home to degrade. So smart insulation strategies are always paired with smart ventilation strategies, which allow humidity to escape.

We build attics and crawl spaces so that they can passively ventilate their insulation. Since the kitchen, bath, and laundry actively create humidity, we actively vent that humidity directly. **Some basements need specialized ventilation strategies to prevent the build-up of radon**.

Home inspectors cannot guarantee how effective the insulation is in a home. We cannot usually see much of it, and we can't ensure that the ventilation strategies are effective since the movement of air and humidity is invisible.

If your heating and cooling bills are higher than you want, or if you detect unusual or musky smells, consult an energy auditor to evaluate your thermal envelope.

The movement of heat and humidity needs to be thoughtfully managed. It is common for homeowners to rethink their homes' insulation and ventilation strategies as their needs change.

Insulation and Ventilation General Information: Spaces Contained Within the Thermal Envelope

Living Space, Basement Utility Room

The idea of thermal envelopes is a fairly new way of thinking about home energy efficiency. Various structures, insulation, and sealants around your home are intended to prevent heat transfer with the exterior. In order to make them effective, you should think of them as a whole system that wraps around the air inside your home. The thing you need to know is:

Your home's thermal envelope is the outer boundary of air inside your home.

The exact location of the boundary is not straightforward: Exterior windows and doors are obvious components of your thermal envelope, but the insulation and sealants in your attic, basement/crawlspace, and exterior walls do much of the work without being seen, and the extent of the boundary can be vague.

Since sealants and insulation are rarely the same structure, they can be oriented in a way that includes or excludes the insulation. The wrong kind of insulation included in a thermal envelope can cause moisture problems, and ineffective sealants can render your insulation ineffective.

If you notice reduced efficiency of the overall HVAC system, poor indoor air quality, low equipment lifespans, and high utility costs, **the best way to think about permanent solutions may be to consider if you may have breaches in your thermal envelope**. Breaches in the envelope can be caused by neglect or weathering, but usually they are merely caused by time.

The effectiveness of thermal envelopes in older homes can be improved by eliminating drafts and air leaks, increasing the effectiveness of insulation.

Although some of these improvements can be expensive, like installing higher performance windows and doors, there are often more cost-sensitive approaches which will improve your thermal envelope as well, like caulking or installing auxiliary window panes.

Insulation and Ventilation General Information: Radon Testing Recommended

I recommend that all homeowners conduct a test measuring the average radon concentrations in the air of the lowest lived-in level of their home. Testing is a common-sense step that will help you understand if you need to take action to protect yourself and your family from radon exposure.

Reliable testing occurs over a long period.

Short, 48-72 hr tests are commonly used to satisfy real estate contracts. However, I believe that even if the result from one of these tests does not warrant action, you should conduct a longer-term test. Those short-term tests are fast, but their brevity is a shortcoming, not a strength.

Radon concentrations can change naturally over the year, due to weather conditions, and even because of innocent actions on the seller's part. **More reliable tests are available at your local hardware store.** These tests usually take many months.

Although radon is a risk with which you do not want to live, I believe that the increased reliability of a longer-term test is worth the wait since you are less likely to have a false-negative result, which would result in a lack of action on your part when it is definitively needed. If you end up with an actionable radon reading, don't panic.

Radon remediation is relatively cheap and highly effective.

The physics of radon infiltration boils down to this: radon is heavy, so it settles in basements and crawlspaces. If you create constant airflow out of these areas, the radon flows out too.

Insulation and Ventilation General Information: Crawlspace Access

Interior Side-wall Hatch

Insulation and Ventilation General Information: Exterior Wall Insulation

Unknown

Insulation and Ventilation General Information: Unfinished Attic Access

Inaccessible Portions

All homes have attics, and no attic is an appropriate place for storage unless there is an insulated, sealed, and conditioned space that has been designed by an engineer or architect to be properly supported, and installed by a professional contractor. Even if you have ample access, *don't just throw your stuff up there.* You could damage your insulation, ceiling, or roof structure.

If you do not have attic access, and if the space between your ceiling and roof is NOT shallow, you should ask a skilled contractor to make access for you in an inconspicuous place. Your attic has lots of important systems in it, and you need to be able to monitor their condition.

If your ceiling seems really really close to the surface of your roof, you still have an attic! It is just super shallow, and likely full of insulation. Although you cannot monitor your attic from within, you can still see roof leaks by watching your ceiling.

Soil Gas Ventilation, and Flooring Insulation: Crawlspace Ventilation Type

Partially Open Crawlspace, Unvented

In the Mid-Atlantic, many experts recommend that crawlspaces should be closed, and given my experience with homes that have crawlspaces, I agree.

Conventional, ventilated crawlspaces are intended to prevent moisture accumulation by allowing airflow in the space, but an effective draft is hard to maintain and they tend to have inherent problems including energy loss, decreased comfort within the home, a soil-like smell in the home, excessive moisture in the home, floor structure durability issues, and indoor air quality problems.

Closed crawlspaces are essentially short rooms with active moisture controls. The surface of the ground near your home must be well-graded and underground water-sources must be controlled, all vents should be sealed, and the surface of the soil in the crawlspace should be completely encapsulated with a 6 mm vapor barrier that fully is attached to the side walls of the crawlspace but not at or above any exposed wood. Often, the soil gas barrier is installed as part of an effective radon-removal system.

A supplemental dehumidifier or a direct connection to the HVAC system will usually eliminate humidity caused by errant moisture penetration.

If you have an conventional crawlspace with open vents or no vapor barrier on the exposed soil, consult a foundation contractor to determine if you should enclose your crawlspace to create a moisture free environment that will reduce energy loss and the risk of pest penetration, material degradation, and indoor air quality problems.

Soil Gas Ventilation, and Flooring Insulation: Crawlspace Soil Gas Barrier

Unsealed, 3mm, Partial Coverage

Soil Gas Ventilation, and Flooring Insulation: Insulation of the Flooring for the Lowest Lived-in Level of the Home

None

Kitchen, Bath, and Laundry Ventilation: Kitchen Ventilation Style

Window/Door

Kitchen ventilation is important EVERY TIME YOU COOK. Smoke, smells, and oils can accumulate in the fabric on your furniture and on the surfaces of your kitchen which allow for microbial growth.

If you have a gas range, it is especially important that you ventilate your kitchen, given that carbon monoxide is a combustion product of your range. Carbon monoxide levels spike when you turn your range on and whenever you open your oven door, if the range is still on, so always turn on the exhaust before you turn on the range, refrain from opening your range to check the doneness of your food, and turn off the range before you open it.

Kitchen, Bath, and Laundry Ventilation: Bathroom Ventilation Style

Exterior Window

Ventilate your bathroom during every use and for a short time afterwords. The accumulation of moisture on the surfaces of your bathroom can damage the finishes and materials in your bathroom, and can cause mold growth.

Kitchen, Bath, and Laundry Ventilation: Clothes Dryer Duct Material

Unknown

Clothes dryer vents are an extremely important mechanical exhaust in your home, since dryers create high levels of moist air that carry chemical solvents and flammable dryer lint.

Have your clothes dryer duct professionally cleaned when you move in and often thereafter to prevent the accumulation of lint and blockage of the exhuast.

Unfinished Attic Space and Exterior Walls: Ventilation Style

Passive, Paired Vents

Unfinished Attic Space and Exterior Walls: Vent Types and Locations

Intake: Grill, Exhaust: Grill

Unfinished Attic Space and Exterior Walls: Energy Audits Provide the Best Insulation and Ventilation Guidance

Consult an energy auditor in order to receive science-based and recommendations for any modifications of either the ventilation system or insulation systems.

Energy auditors identify specific areas of heat loss and adverse airflow patterns that can allow a homeowner to achieve better HVAC performance and reduce hidden condensation.

Unfinished Attic Space and Exterior Walls: Attic Insulation Supplemental Barriers and Coatings
Unknown

Unfinished Attic Space and Exterior Walls: Insulation Style, Material, and Identifying Marks
Blown, Fiberglass, No Visible Identifying Marks

Unfinished Attic Space and Exterior Walls: Approximate Insulation Depth and Location
Ceiling-side, Between 6" and 10"

Limitations

Insulation and Ventilation General Information

MOLD OR AIR QUALITY LIMITATIONS

I did not test for mold or any measurable indicators of air quality in any part of the home. If I noted that mold or other biological agents could be smelled or appeared to be growing on the components of your home, I did not evaluate that mold to determine its activity, type, or hazardousness.

Out of courtesy only, I noted affirmative indications that you should consult a contractor. Even if did not mention a specific reason to consult a professional, I did not and do not discourage or advice you to forego an inspection by a roofing professional.

Air quality is a serious concern for many homeowners, and it can only be evaluated by trained technicians with specialized equipment.

Insulation and Ventilation General Information

THE BULK OF YOUR FOUNDATION AND SOIL GAS VENTILATION SYSTEMS ARE INACCESSIBLE

Normal Foundation and Soil Gas Restrictions

If I was able to gain access to the area under the lowest lived-in level of your home, only the surface of the ground or barrier was visible. I did not move any soil-gas barriers or vapor barriers, and I had no access the the sump, any areas under the slab or foundation walls, or the volume of the soil directly under the home.

The ventilation systems around your foundation are designed to compensate for the nature of the soil around your home and the gasses present in it. Even if I had access to the interior of your foundation or the soil under your home, I could not test for the humidity, quality, or chemical components of your soil or the flow of soil gasses or their nature.

Radon is a particularly well understood and measurable soil gas. The EPA considers radon to be a long-term contributor to the development of lung-cancer in normally healthy individuals. *Unless otherwise indicated, I did not test the air in your home or near your foundation for the presence of radon.* If I or a contractor began or was actively testing for radon, I recorded readily visible facts about the test being performed only if the collection of these facts did not disturb a test-in-progress. Closed-home conditions necessary for accurate radon testing means that if any test was in progress, I was unable to open and close doors and windows normally.

I noted the presence of any installed radon remediation systems, and I described any visible indicators related to its performance, but you should consult a professional for an evaluation of your system and a description of its maintenance. Regardless of any advice given to you by any real estate professional involved in or advising you about the sale of your home, you should conduct a long-term radon test. Short-term, 48-72 hour radon testing techniques are acceptable for most real estate transactions in most jurisdictions, however longer-term radon tests normally more accurately reflect the concentrations of radon that will be present in your home.

Insulation and Ventilation General Information

APPLIANCE MANUFACTURER'S VENTILATION GUIDANCE WAS NOT EVALUATED

Although the I looked for common solutions that can be used to improve the safety and function of normal appliance ventilation systems, I could not confirm the compliance of your equipment with installation recommendations provided by the manufacturer for your specific model of equipment unless that recommendation was specifically noted on the equipment itself and that recommendation described details of a permanently installed and accessible portion of the equipment. A full, technically exhaustive evaluation of your appliance's ventilation requires an experienced contractor and access to a copy of the installation recommendations provided by the manufacturer.

Insulation and Ventilation General Information

ALL ATTICS RESTRICT VISIBILITY OF HOME SYSTEMS

Normal Access Restrictions Due to Finished Surfaces and Inaccessible Spaces

If the access to your attic was abnormally restricted, the attic should be inspected by a qualified specialist as soon as more effective access can be created. The installation and performance of your roof and attic systems can contribute to potential fire or health hazards, and other safety issues, damage, or defects that have the potential to cause damage to the home.

Insulation and Ventilation General Information

AIR FLOW GENERATED BY YOUR VENTILATION SYSTEM WAS NOT MEASURED

Visible intake and exhaust vents indicate that an attempt was made by the builder to ventilate the attic a roof structure, but confirming proper ventilation methods would have been possible only during original construction, before drywall and insulation were installed. Furthermore, the effectiveness of standard attic ventilation techniques vary due to annual temperature fluctuations, and these techniques can perform differently due to roof design, homesite locations, or weather conditions.

I couldn't measure air flow into and out of your roof, and although the I looked for common solutions that can be used to improve the safety and function of your attic ventilation systems, I could not confirm the compliance of system components with installation recommendations provided by the manufacturer for your specific vent models. Fans were operated by normal means, so if a thermostatically-controlled fan did not activate, it's performance could not be observed.

Out of courtesy only, I noted the type and condition of readily accessible and visible indicators about the performance and adequacy of the ventilation systems in order to look for affirmative indications that you should consult a contractor. Even if did not mention a specific reason to consult a professional, I did not and do not discourage or advice you to forego an inspection by a roofing professional.

The capability of your attic to ventilate directly impacts the longevity of you roof covering material, and each specific roofing manufacturers have specific guidance regarding ventilation systems installed for their individual products. A technically exhaustive evaluation of your attic's compliance with this guidance requires an experienced roofing contractor and access to a copy of the installation recommendations provided by the manufacturer.

Insulation and Ventilation General Information

YOUR INSULATION'S INSTALLATION LIMITED HOW MUCH OF IT I COULD INSPECT

Finished Interior Walls and Ceilings, Attached or Loose Insulation

Any stored material obscured the insulation in the attic and walls and therefore limited my ability to observe these spaces. The type, depth, and consistency of exterior wall insulation is normally undeterminable because, generally, walls are finished on both the interior and the exterior. Unless I noted specific solutions in your report that were related to the insulation of your walls, the insulation of the walls at your property was similarly inaccessible.

Since sprayed, panel, and batt insulation are secured to fixed surfaces, since the performance of loose insulation depends on the depth and evenness of its installation, and since the proper re-installation of insulation is best executed by trained professionals, I only inspected your attic insulation by observing it's surface and attachments, if it was visible. I did not disturb *any* insulation unless there was cause to believe that more information could be gained regarding a specific adverse condition in the home, and unless the insulation could be both readily removed and readily reinstalled.

Although I attempted to include pictures or descriptions of the identifying marking when they were present, determining the effectiveness, R-value, and permeability of insulation requires technical measurements performed with specialized equipment operated by professional insulation or air quality technicians. I did not perform any such measurements. I could not identify any insulation foam cell-type, the brand name and chemical description of any foam, any application’s compliance with the manufacturer’s thickness and density recommendations, or requirements describing a necessary the combination of specific coatings and foams.

Thermographic imaging was used provided that there was cause to believe that details regarding the effectiveness of your insulation would be revealed, but thermography does not provide a view of the insulation or its activity; it only reports the relative temperatures of the surfaces in contact with the insulation, and this information was only used as a data point about the performance of the insulation if I took that measurement.

The practical effectiveness of insulation can be described by considering the effect that it has on the comfort of the air in your home and the impact it has on your overall heating and cooling costs during the various seasons, which is information to which I had no access. You should request the seller provide any heating and cooling bills so that you can consider this information.

Solutions

12.1.1 Insulation and Ventilation General Information

Solution Needed

SYSTEMIC INSULATION AND VENTILATION EVALUATION NEEDED

Unconditioned Spaces Within the Thermal Envelope, Incorrectly Attached Soil Gas Barrier, Poorly Installed Insulation, Excessive Mold Smell, Inaccessible Portions of the Crawlspace

Consult a highly qualified insulation contractor, mold contractor, or energy auditor to engage in an exhaustive evaluation and repair of the insulation and ventilation system, as well as the finished surfaces and structural components that may have been damaged due to an excessive build-up of condensation or mold growth.

The quality of workmanship, the condition the components, and installation of the equipment shows significant signs of the systemic adoption of nonstandard building practices that often manifest in unseen problems which cannot be predicted by a visual inspection.

12.2.1 Soil Gas Ventilation, and Flooring Insulation

Solution Needed

EXTERIOR DRAINAGE ROUTED THROUGH AN INTERIOR CRAWLSPACE

Consult a general contractor to evaluate the landscaping drainage the appears to have be routed through an inaccessible crawlspace under the ground level addition. This design is highly likely to contribute to mold growth and insect penetration.

12.4.1 Unfinished Attic Space and Exterior Walls

Solution Needed

MISSING ATTIC DEHUMIDIFICATION SYSTEM

Remediate all mold within the carriage house attic and consult an energy auditor to enact a dehumidification strategy in the attic by installing a ventilation system or complete the installation of an unventilated attic that includes the entire attic within the conditioned thermal envelope of the home.

Ventilation/dehumidification of the attic is a CRITICAL FUNCTION of the attic in your home; it prevents structural damage, roof damage, and mold growth, and it is a critical part of controlling the temperature and humidity levels in your home.

13: CARRIAGE HOUSE HEATING AND COOLING

Information

General HVAC Information: Heating Energy Source and Medium
Forced Air, Natural Gas

General HVAC Information: Heating Configuration and System Type
Furnace, Central

General HVAC Information: Cooling Type and Configuration
Independent Cooling System, Shared Heating and Cooling Ductwork

General HVAC Information: Functional Cooling System

At the time of the inspection, the cooling system operated using standard controls. The performance of the equipment and the temperature differential noted in the report are the indicators of the functionality of the system as a whole; the technical functionality of specific parts individually--like the compressor, the condenser, the fan, or other components--is not within the scope of the inspection.

Condenser and Refrigerant Line : Things You Need to Know About Condensers

The condenser is only the exterior portion of your A/C and/or heat pump system. No air goes into or comes out of the home here; a small insulated pipe circulates refrigerant from the evaporator coils to the the HVAC equipment inside, and that circulating refrigerant is how heat enters or exits the home.

For condo owners, this is the only piece of equipment outside their home for which they are responsible, but all homeowners should be mindful that their condenser is installed on a level, stable platform and that the insulation on the refrigerant line is intact.

Condenser and Refrigerant Line : Condenser Location
Exterior North

Condenser and Refrigerant Line : Brand & Data Tag
Nortek

Condenser and Refrigerant Line : Condenser Age
5 Years

Evaporator Coils: Things You Need to Know About Evaporator Coils

The evaporator coils installed near the blower of your HVAC system are the interior portion of your A/C. Refrigerant circulates heat to the condenser on the exterior of the building, which cools the coils, and air in your house is blown over the cooled coils.

These coils are delicate, which is why we use filters to protect them from dust and debris. They are also moist, which is why your HVAC system has several drainage pipes and pumps. You will have no interaction with your coils, but you should know that they are there.

Evaporator Coils: Brand & Data Tag

Nortek

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

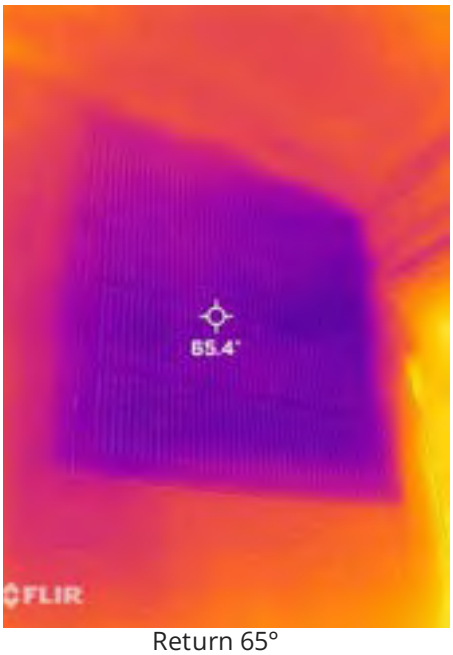
Evaporator Coils: Coil Age

5 Years

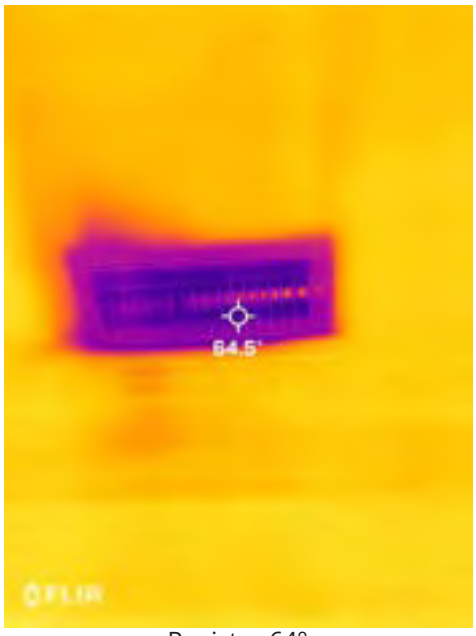
Evaporator Coils: Temperature Differential

1 Degrees

The temperature differential between the air entering the HVAC system and the return where it exits the HVAC system reflects the effectiveness of the heating and cooling. The temperature differential created by normally operating HVAC systems is between 14° and 22°.



Return 65°



Register 64°

Drainage and Controls: Things You Need to Know About the Drainage and Controls for Your HVAC System

Heating and cooling the air in your home creates at least one cold surface inside the equipment, and condensation forms on cold surfaces. Your HVAC system has a built-in drainage system that collects and discharges this condensation to protect the equipment and finishes in your home.

Redundant overflow protection is present in high-end systems. Sometimes it is just a second condensation discharge pipe, but often it will be an alarm or a switch that shuts your system off if it detects excessive moisture. These switches are only one of the many safety, service, and cut-off switches installed as part of your equipment.

If you have a maintenance shut-off switch in your utility closet, you should definitely find a way to clearly mark it as a "kill" switch so that it can easily be identified and avoided.

The most important switch for your HVAC system is your thermostat, and the location effects how well the individual rooms are heated and cooled. Relocating your thermostat to important rooms in your house or installing a smart, coordinated thermostatic system is likely to help you control your home's temperature more comfortably.

Drainage and Controls: Interior Equipment Orientation

Upward Draft

Drainage and Controls: Primary Condensation Drain Termination

Full HVAC System Discharge Pipe, Discharge Pipe, Floor Drain

Drainage and Controls: Secondary Condensation Overflow Protection

None Visible

Drainage and Controls: Maintenance Shut-Off Switch

Utility Room/Closet, A/C Service Disconnect

Note the presence of the kill switch. If the HVAC system is not functioning, check that all switches are in the "on" position before any other attempts at repairs or calls to repairmen are made.

Drainage and Controls:

Thermostat Types and Location

Electronic

Forced Air Distribution: Things You Need to Know About Forced Air Distribution

Distributing air around your home starts when unconditioned air is pulled into the HVAC system through gaps under doors and return ducts, so that it can be replaced with heated or cooled air. That unconditioned air passes through a filter that protect your equipment from dust and debris.

Frequently change these filters to reduce the monthly and lifetime costs of operating your system.

Your HVAC filter isn't a great tool for managing dust and allergens in the air since your HVAC system doesn't pull hard enough to pick up particles that have landed on the surfaces in your house. If you would like to manage the dust and allergens in your home, thoroughly clean all of the finished surfaces as well as the interiors of your return ductwork.

Regardless of your HVAC system, hot air tends to rise and cool air tends to fall; some systems have dampers installed on the ducts so that you can direct cool air up and warm air down. In individual rooms, ceiling fans will mix the air and give it a more even temperature.

Forced Air Distribution: Filter Orientation

Return Grill

Forced Air Distribution: Installed Filter Type

Disposable

Forced Air Distribution: Duct Type

Metal

All homes can benefit from increased air quality from a professional cleaning of the HVAC ductwork to clear out the dust, debris, and smells of the previous owners.

Furnace : Things You Need to Know About Furnaces

Your furnace is a sophisticated combustion system, and you shouldn't tinker with it.

Maintain a service contract with an HVAC technician, and have the furnace cleaned and serviced at least once a year, prior to the beginning of the heating season.

Furnace : Brand & Data Tag

Nordyne

Establish an annual service contract with and HVAC contractor that specializes in boilers, and have them conduct a thorough inspection as well as annual maintenance either at the beginning of each heating season.

Furnace : Equipment Age

8 Years

Furnace : Efficiency Type

High Efficiency

Supplemental Heating and Cooling: Supplemental Cooling

Ceiling Fan

Supplemental Heating and Cooling: Functional

The space heating and space cooling present in the home was operated on the day of the inspection using normal controls.

Limitations

General HVAC Information

MANUFACTURER'S INSTALLATION GUIDANCE WAS NOT EVALUATED

Although the I looked for common solutions that can be used to improve the safety and function of normal HVAC systems, I could not confirm the compliance of your equipment with installation recommendations provided by the manufacturer for your specific model of equipment. A full, technically exhaustive evaluation of your HVAC system's installation requires an experienced HVAC contractor and access to a copy of the installation recommendations provided by the manufacturer.

General HVAC Information

HEAT EXCHANGER AND A/C COILS WERE NOT ACCESSIBLE

Comprehensive evaluations of the combustion chamber, heat exchangers, and the a/c evaporator coils requires invasive, technically exhaustive measures that exceed the scope of the inspection. I was able to identify readily accessible indicators of the condition of these inaccessible components--like visible corrosion, flame color, smells, and temperature differentials--however, you should consult a qualified HVAC technician for an evaluation and service of the system.

General HVAC Information

AIR DISTRIBUTION AND AIR QUALITY WERE NOT INSPECTED

Individuals have their own idea of what constitutes adequate performance of the HVAC system. Neither the consistency of air/temperature distribution throughout the home, nor the presence of temperature gradients, nor the quality of the air after it exits the HVAC system was tested on the day of the inspection, given that these measurements require specialized equipment and the expertise of an HVAC technician.

I could only see if air returns were installed in the appropriate locations, if heating and cooling supplies were present in each room, and if the HVAC systems created a standard temperature differential at a representative pair of returns and supplies.

Temperature gradients existed at the home on the day of the inspection, and with the exception of drastic and noticeable gradients, the gradients were neither measured nor commented upon. Gradients will exist after you occupy the home because temperature gradients always exist--as a basic fact of physics. Upper floors are warmer than lower floors, and rooms with more effective insulation keep their temperature more consistently than neighboring rooms.

Although I was able to smell the air for basic indicators of air quality problems, air quality testing is a technical and rigorous measurement that requires expertise. Normal home maintenance routines include cleaning of the HVAC distribution equipment, and air quality testing is always justified if you are concerned or unknowledgeable about the quality of your home's air.

Drainage and Controls

DISCHARGE UNCONFIRMED

I was unable to confirm where the condensate pump discharges. The condensate pump did not operate during my home inspection, and forcing it to discharge is beyond the scope of the inspection. It should discharge outside, onto the ground where the grade directs the water away from the foundation.

Supplemental Heating and Cooling

SUPPLEMENTAL HEATING AND COOLING CALIBRATION AND DISTRIBUTION EFFECT NOT EVALUATED

Supplemental heating and cooling equipment were present at the home at the time of the inspection. I did not measure the calibration of the equipment to any thermostat, and I did not evaluate the resultant effect of the equipment on other, currently installed HVAC equipment.

Solutions

13.2.1 Condenser and Refrigerant Line

Normal Maintenance

DETERIORATED REFRIGERANT LINE INSULATION

Replace the insulation on the refrigerant line to the condenser on the exterior of the building at all of the locations where it is deteriorated or missing.

13.3.1 Evaporator Coils

Solution Needed

INCORRECT A/C SYSTEM TEMPERATURE DIFFERENTIAL

Insufficient Temperature Differential

Repair or replace the non-functional A/C system.

Although the A/C system went through start up procedures and the blower ran, the temperature of the supply air measured at the registers not within operational norms.

A functional A/C system will create a difference between the temperature of the air where is enters the return duct and the temperature of the air where is exits the supply ducts. That differential should be at least 14 degrees and should not exceed 22 degrees.

13.4.1 Drainage and Controls

Normal Maintenance

INADVISABLE THERMOSTAT PLACEMENT

Excluding Upper Levels of the Home

Install a smart thermostatic system with several coordinated temperature gauges on all levels of the home or move the thermostat to a position near the center of the living space--preferably close to HVAC returns or the interior wall of the primary bedroom.

Thermostats located on interior walls, away from windows, and away from registers are generally better protected from temperature fluctuations and prevent HVAC system over-activity. Thermostats in bedrooms--preferably in the primary suite--maintain a more comfortable temperature in bedrooms bedroom at night. Relocating your thermostats will allow you to control the temperature in the home more consistently, comfortably, and effectively.

13.4.2 Drainage and Controls

Normal Maintenance

POORLY MARKED MAINTENANCE SHUT-OFF "KILL" SWITCH

Clearly mark the maintenance shut-off "kill" switch in the HVAC closet with a labeled red switch plate cover or one that prevents accidental de-activation of the system.

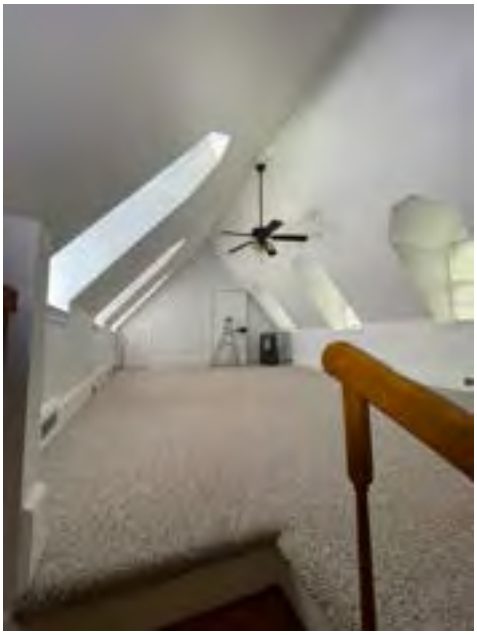
13.5.1 Forced Air Distribution

Recommended Change

MISSING RETURN AIR COMPONENTS IN A LEVEL/ZONE

Install a supplemental heating/cooling system or the missing return air components for the area of the home currently only serviced by the HVAC supply system.

Without both an air return and return ductwork, air will not circulate out of the area, which will pressurize the air in that part of the home. The HVAC system cannot force conditioned air into an overly pressurized room, and as a result the area will be insufficiently heated/cooled and unhealthy conditions may develop due to air stagnancy.



13.6.1 Furnace

Recommended Change

OPEN PENETRATIONS IN THE HIGH EFFICIENCY FURNACE COMBUSTION CHAMBER

Open Penetrations

Seal the open penetrations in the combustion chamber for the high efficiency furnace with gaskets or fittings designed for use in furnaces.

14: STRUCTURAL SYSTEM

Information

General Information: Things You Need to Know About the Structure of Homes

The structure of a home is complex, but its job is straightforward: to transfer the home's weight to the ground underneath. Usually, this process is unseen, but occasionally you can see or hear it. We call these sights and sounds "signs of movement" because they are only noticeable if the parts of the home have moved. The thing about the structure of homes that you need to know is:

All homes will show signs of movement.

All homes move. When your home was built, the builders did their best to compact the ground below, but this is never a perfect process because the ground beneath is not a perfect substance. So the earth and the house on top will settle until they reach a point when the movement stops.

If the house has moved enough, you may see a crack--but old cracks may have been there for decades, and new ones may be there for decades without changing! Unusual movement in a home is movement generally associated with change.

Moisture and pests can cause the structure of your home to change, but the foundation of your home is on the ground, and the earth holds both water and pests, so these things need to be thoughtfully managed.

You need to know that **permanent waterproofing does not exist**. Neither does permanent pest-proofing. Nor movement-proofing. So be mindful of the signs of new water penetration, new pests, and new movement.

Home inspectors cannot guarantee that movement, moisture, and pests are not a problem. We are not engineers, and the conditions around your home may change after we visit. All we can do is tell you if the structure, the movement of a system, and the moisture and pest control strategies appear normal.

If you see accelerating change, if there is a new risk of movement from moisture or pests, or if there is further movement after part of the house has been modified, then consult a professional.

You don't have to do this alone. Regular inspection by professionals is a reasonable step you can take to help you manage these risks.

General Information: Building Period
Original, Several Additions, Significant Renovation

General Information: Structural Modifications
Masonry Brace Plates, Pier & Beam Additions, Rebuilding, Under-pinning, Masonry Replacement

General Information: Exterior Access
Portions of the Exterior Wall Were Above Grade

General Information: Interior Access
Basement, Crawlspace

Perimeter Foundation: Perimeter Foundation Type
Exterior Wall, Original & Addition Exterior Walls

Perimeter Foundation: Perimeter Foundation Style
Mortared Block, Poured

Perimeter Foundation: Perimeter Foundation Material
Brick, Concrete

Perimeter Foundation: Common Foundation Cracks
Jack-arch Settlement

Evaluate the visible, common foundation wall crack. Some degree of cracking is normal in all homes, and repairs should only be undertaken if an expert determined there is a risk to the structure of the home.

Execute any necessary and related grading modifications, and install a crack monitor or scratch plate to determine if movement continues. Contact a professional if new movement is noted.





Modular Supports: Modular Foundation Type
Post & Beam, Interior Foundation Wall, Beam (Unknown Support Type)

Modular Supports: Upright Component Style
Supplimental Upright Post, Supplemental Jack-screw Pier/Post, Dry Stacked Block, Poured

Modular Supports: Upright Component Material
Wood, Steel

Modular Supports: Lateral Component Location
Load Specific

Modular Supports: Lateral Component Style & Material
Wood, Beam, Doubled Joists

Wall Framing & Floor Bearing: Wall Framing Style
Unknown

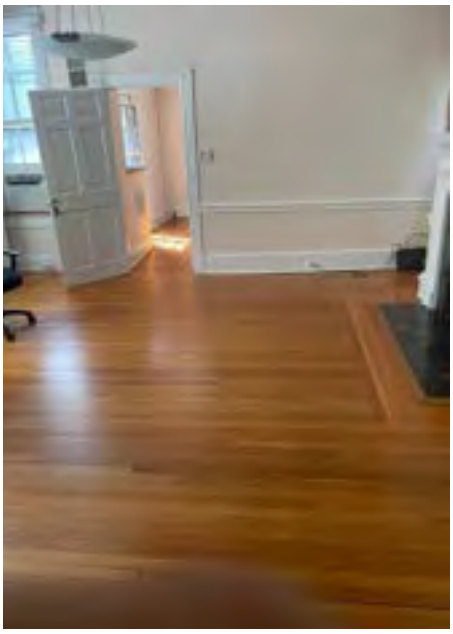
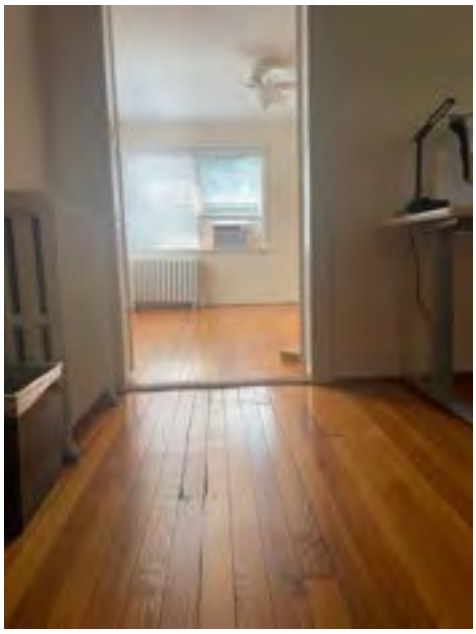
Wall Framing & Floor Bearing: Floor Bearing Style
Partial Bearing, Not Visible, Sistered Joists

Wall Framing & Floor Bearing: Floor Bearing Material
Wood, Joists

Wall Framing & Floor Bearing: Legacy Sagging Floor

Consult a general contractor to investigate the cause of the sagging floor. This sag appeared to have been a long-standing feature of the home.



Moisture Controls: Exterior Moisture Control

Exterior grading is the first line of defense against water intrusion. Grading is the angle of the earth around the building and we use this angle to direct water away from the foundation before it has a chance to intrude into the basement.

See "Lot and Landscaping" section of this report for any identified grading solutions or improvements.

Moisture Controls: Drains and Sealants
Exterior Drain

Moisture Controls: Sump Pump
None Visible

Limitations

General Information
INACCESSIBLE AREAS
Finishes, equipment, recent repairs, environmental conditions, and other obstructions normally restrict the visibility of a building's structural components on both the interior and exterior.

Since the inspection was non-invasive, I did not remove finishes or move stored items since doing so could have cause damage, so I could not observe the entirety of the structure.

General Information
OBSTRUCTIONS
Building Mechanicals

General Information
ENVIRONMENTAL CONDITIONS
Exterior Grade

Adverse weather conditions, lack of light and excess vegetation will obscure some aspects of the exterior structure that would be otherwise visible.

Solutions

14.1.1 General Information

Solution Needed

SYSTEMIC STRUCTURAL EVALUATION NEEDED
Consult a highly qualified general contractor to engage in an exhaustive and invasive evaluation of the structure, construction, materials, and related systems.
The quality of workmanship, and the condition of the components, and their installation shows significant signs of the systemic adoption of nonstandard building practices that often manifest in unseen problems that cannot be predicted by a visual inspection.





14.2.1 Perimeter Foundation

EXCESSIVE FOUNDATION MOVEMENT

Bulge, Cracking

Solution Needed

Consult a structural engineer to evaluate the excessive foundation movement on the east wall.

Significant means (such as the addition of a bracing beam) have been to reinforce the wall, however the movement appear to be continuing.

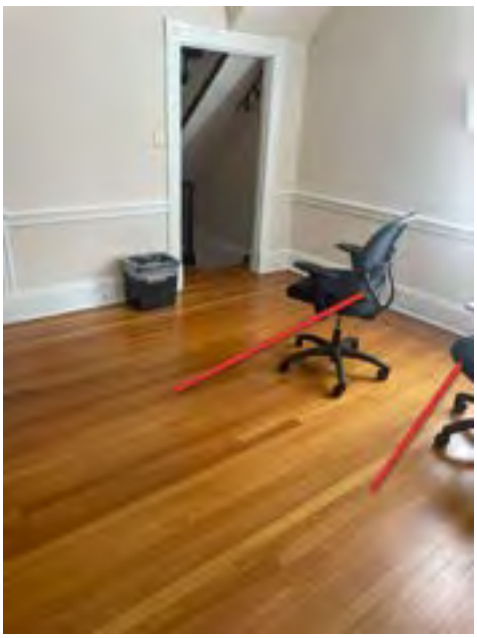
The beam has been fastened to the wall through joists within the home that appear to be severely damaged and are contributing to an excessive flooring shift.

From the crawlspace, he base of this wall appears to have no footers or severely undermined footers, and it appears as though insufficient repairs were made in the recent past. Recently repaired/replaced floor joists appear have to been pulled out of their bearing position by this movement and as a result have been re-notched, which reduces their ability to bear weight.

From the exterior, rows of bricks which have been recently repaired appear to have pulled away from the wall.

from within the attic, sagging is visible in the masonry wall



14.2.2 Perimeter Foundation

Solution Needed

ATYPICAL SUPPLIMENTAL STRUCTURAL SUPPORT DESIGN

Supports appear to have been added in order to supplement the floor joists visible in the basement crawlspace, all of which are severely damaged by wood destroying organisms.

These supports appear to have been inappropriately and ineffectively been installed with no ability to bear or transfer any structural weight to any footer or solid surface. It appears as through they generally rest on subsiding bare soil, are not attached to the joists they are meant to supplement, have been inadequately placed to bear weight indirectly, and are bending at critical junctures.

The terrazzo flooring about these modifications appears to suffer from rapid degradation. The upper levels of the home have similar symptoms, which may suggest that there is extensive termite damage that has not been repaired.

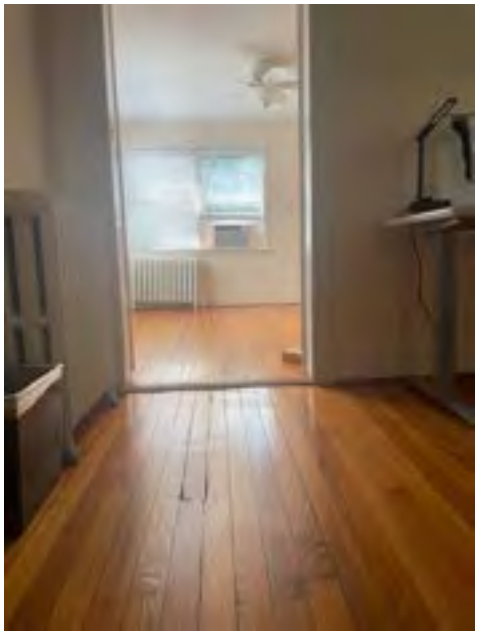
I recommend AGAINST OCCUPYING THE HOME until a structural study or evaluation can be carried out on all levels of the home.










14.2.3 Perimeter Foundation

Solution Needed

VISIBLE AND INACCESSIBLE DETERIORATION

Several locations of structural deterioration appeared to be present in areas around the rear home, beyond the apparent edge of the foundation wall, visible from the basement. These locations need evaluation.



15: PEST AND VERMIN

Information

General: Things You Need to Know About Pests in the Home

All animals need to keep themselves warm, shelter themselves from the elements, and provide food. Out of all of the animals, humans have the most sophisticated and successful strategy for dealing with all of these needs, and it is called "building a house." Food, shelter, and warmth make our homes extremely attractive to all sorts of pests, which is why the thing you need to know about home pests is:

Pests live with us because we make it easy for them to live with us.

Each area of the house is a different niche that appeals to different sorts of animals. Some mammals prefer moist, cool places like a basement or foundation; some prefer warm areas like attics, some insects like exposed wood, and some like dry holes. The one thing that makes the house welcoming for these kinds of pests is a lack of preventive maintenance.

If pests can't enter your home easily because the house's exterior is well maintained, pests are easier to control.

So, monitor your home's siding, roof, trim, and vegetation, and repair deterioration accordingly. However, it would be best if you also understood that your best effort might not be good enough--keeping professional pest treatment active may be necessary for your house. That isn't a sign of failure on your part or the part of the home. It is a sign of the tenacity of animals.

This portion of your home inspection does not replace a pest inspection, and it is not intended to describe an absence of pests, only to point out if positive indicators of pests are present. Professional pest treatment is the only reliable way to inspect for and treat pests currently present in the home.

General: Prevention at the Property

Termite Abatement Traps, Rat Boxes

These pest prevention measures appear to be present at the property, and should be maintained and kept active. I cannot determine if they are currently active or effective, and a pest control expert should be consulted.

Solutions

15.5.1 Attic Pests

Recommended Change

VISIBLE SIGNS OF ATTIC PESTS

Burrows, Nests, Wasps, Mice

Remove nesting materials and related debris, repair all damage, seal all open penetrations, remove any insulation with rodent droppings, and contact a pest control professional to determine if further control measures are necessary.

16: CARRIAGE HOUSE STRUCTURAL SYSTEM

Information

General Information: Building Period
Original

General Information: Structural Modifications
None Visible

General Information: Exterior Access
Portions of the Exterior Wall Were Above Grade

General Information: Interior Access
None

Perimeter Foundation: Perimeter Foundation Type
Exterior Wall

Perimeter Foundation: Perimeter Foundation Style
Mortared Block

Perimeter Foundation: Perimeter Foundation Material
Brick

Wall Framing & Floor Bearing: Wall Framing Style
Unknown

Wall Framing & Floor Bearing: Floor Bearing Style
Not Visible

Wall Framing & Floor Bearing: Floor Bearing Material
Not Visible

Limitations

General Information

INACCESSIBLE AREAS

Finishes, equipment, recent repairs, environmental conditions, and other obstructions normally restrict the visibility of a building's structural components on both the interior and exterior.

Since the inspection was non-invasive, I did not remove finishes or move stored items since doing so could have cause damage, so I could not observe the entirety of the structure.

General Information

OBSTRUCTIONS

Building Mechanicals

General Information

ENVIRONMENTAL CONDITIONS

Exterior Grade

Adverse weather conditions, lack of light and excess vegetation will obscure some aspects of the exterior structure that would be otherwise visible.

17: INTERIOR SURFACES

Information

General Interiors Information: Things You Should Know About Interior Surfaces

Cracking and sagging in your finishes can be normal, but they can also imply a problem behind the surface. Unfortunately, no one can see behind walls—not even with a home inspector's tools. What we can all see, however, is context, which is why you need to know this one thing about your finished interior surfaces:

Changes and patterns in your finishes should be taken seriously.

Shrinkage and minor cracks are typical at corners and edges, like those around drywall seams, doors, and windows. Ongoing cracking should always be investigated, and cracking that appears to be related to sagging and cracking that extends between levels of the house.

Discoloration, warped materials, and smells deserve special attention since they are usually due to moisture, and constant humidity can cause health problems. Moisture can have several causes—plumbing, condensation, roof and flashing problems, ground moisture, or animals—and all of those causes can usually be dealt with effectively.

Regular preventative maintenance can help you notice changes in your finished surfaces. It can help prevent them as well—caulk and seal seams around countertops, drywall edges, and plumbing fixtures. Floors, stairs, walls, and ceilings display blemishes if kept clean and debris-free.

Clean and uncluttered homes are easier to monitor and maintain.

Minor repairs will need to be made to your interior finishes; remember that these finishes are just a surface, and what is behind them is essential, too.

General Interiors Information:
Wall and Ceiling Materials
Gypsum Board, Plaster, Plywood
Paneling

General Interiors Information: Window Age
30+ Years, Original

General Interiors Information: Stair Types
Standard

Walls and Ceilings: Wall Finishes
Flat Paint, Wainscoting, Decorative Masonry, Exposed Masonry

Walls and Ceilings: Ceiling Finishes
Flat Paint, Decorative Molding, Acoustic Tile

Walls and Ceilings: Possible Locations of Asbestos Acoustic Ceiling Tile
2nd Floor Addition

The home appears to contain a layer of asbestos-acoustic ceiling tile.

Before removing or handling the tiles, consult an asbestos-removal contractor regarding effective hazardous material protection, such as encapsulation or remediation.

Doors and Windows: Door Style and Features
Swinging, Louvered, French, Pocket

Doors and Windows: Doors Materials
Wood

Doors and Windows: Window Styles
Casement, Double-hung, Fixed, Fixed Transum, Divided-Light

Doors and Windows: Window Sash Materials and Features
Wood, Interior Screens

Doors and Windows: Glazing and Glass Features
Double, Single

Doors and Windows: Some Single Pane Windows Can Be Updated Without Replacement

Some single pane windows can be updated without replacement if special means are necessary to encapsulate any paint on them or to increase their ability to insulate.

Updating options normally involve the addition of glass panes—either storm windows or interior auxiliary panes—that will create an air gap around the original window. These gaps hold air that is used to insulate, and they conceal whatever is behind them.

Floor Covering and Sub-flooring: General Floor Covering

Natural Wood, Carpet, Ceramic Tile, Terrazzo

Floor Covering and Sub-flooring: Kitchen and Bathroom Floor Covering

Ceramic Tile, Slate

Floor Covering and Sub-flooring: Slab Floor Covering

Unfinished

Floor Covering and Sub-flooring: Sub-Flooring

Boards, Plywood

Stairways and Railings: Tread Material and Covering

Wood

Stairways and Railings: Handrail Attachment

Baluster/Newel Post Mounted

Generally-accepted modern safety standards recommend that graspable handrails should be present on any ramp and at the open sides of any stairway with 4 or more risers.

Handrails should extend the entire distance between the top-most and bottom-most landing, and they should be between 34" and 38" above either the standing surface or the line connecting the tread nosings on a stairway.

"Graspable handrails" have recesses on both sides of the handrail, and I have included a picture demonstrating handrail design guidance that is generally accepted by most municipalities.

Stairways and Railings: Guardrail Attachment

Baluster/Newel Post Mounted

Stairways and Railings: Guards and Balusters
Wood

Generally-accepted modern safety standards recommend that a non-climbable guard and handrails should be present on any ramp, the open sides of any stairway with 4 or more risers, and at any location where a person can stand which is more than 30" higher than the grade at any immediately surrounding areas.

Guardrails should not be climbable and should extend at least 36" above the standing surface; the gaps between individual components of the guards should not be large enough for a 4 & 3/8" sphere may not pass through at any point, and the gaps between the guardrail and the surface on which a person can stand should not be large enough for a 6" sphere may not pass through at any point.

Countertops, Cabinets, and Closets: Kitchen Cabinetry Material
Wood

Countertops, Cabinets, and Closets: Kitchen Counter Material
Laminate

Countertops, Cabinets, and Closets: Kitchen Backsplash Type
Countertop Material Rim

Limitations

General Interiors Information

THE THINGS YOU NEED TO KNOW ABOUT RELATIVE HUMIDITY

"Moisture meters" commonly used by home inspectors do not detect moisture. Moisture meters measure the electrical capacitance or resistance present in materials as a proxy measurement for "relative humidity." Since water has distinct electrical characteristics, moisture meter readings can be calibrated to determine the weight of the water compared to the weight of the wood, in completely saturated wood, at 70° F, at sea level.

Not all materials in a home are wood; no moisture reading definitively presents materials as "wet."

All materials have a degree of humidity present in them, and due to osmotic pressure, the presence of moisture in a material is influenced by the moisture content of the soil around and air in the home on that day. So "relative humidity readings" only make sense compared to similar, nearby materials.

Therefore, **all noted relative humidity readings as described in your report are relative to nearby materials that I suspected did not have a source of extraneous humidity**. These nearby materials can be considered as a control or standard for the normal moisture in that sort of material, in that room, on that day.

So, when I described the humidity level in the materials in your home, I did not mean to say that the materials were "wet" or "dry." I described the presence of an active, abnormal, and uncontrolled water source behind them.

Elevated humidity is not the cause of a problem; it is a symptom.

Deformation or degradation due to humidity can indicate that leaks are common in the home. However, pests and condensation are often overlooked but common causes of material moisture accumulation.

Stairways and Railings

THE INSPECTION OF STAIRS, RAILINGS, AND STAIRS FOUNDATIONS IS LIMITED

I cannot physical test of the impact resistance of stairs and railings, and I cannot determine the type or adequacy of and coatings or treatments applied to treads.

The condition of any component at the grade or lower, including concrete pads or footers, could not be examined

Solutions

17.3.1 Doors and Windows

Normal Maintenance

BROKEN AIR SEALS BETWEEN DOUBLE-PANE WINDOW GLAZING

Visible Humidity, Clouded

Replace the double-pane glass in the casement windows as needed.

Broken air seals that allow air to escape from between double-pane window glass normally only have a cosmetic effect.

This condition presents in either cloudiness between windowpanes or in the waviness of windows in an early stage of “collapse”, which is the word that is used to describe window panes that are curved in toward each other.

These broken seals are a natural consequence of age, and will progressively worsen. Excessively collapsed windows loose their ability to insulate.

17.3.2 Doors and Windows

Recommended Change

BROKEN WINDOW GLASS

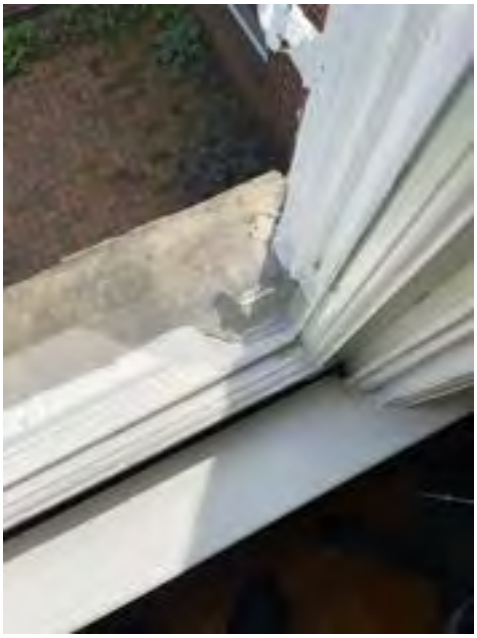
Replace the 2 broken panes of glass in the main house and 1 in the carriage house


17.3.3 Doors and Windows

Recommended Change

LEAKY AND GAMAGED WINDOW SILL

Repair the leaky window sill on the second eastern wall, and then remove replace any finishes that have been damaged by persistent moisture.

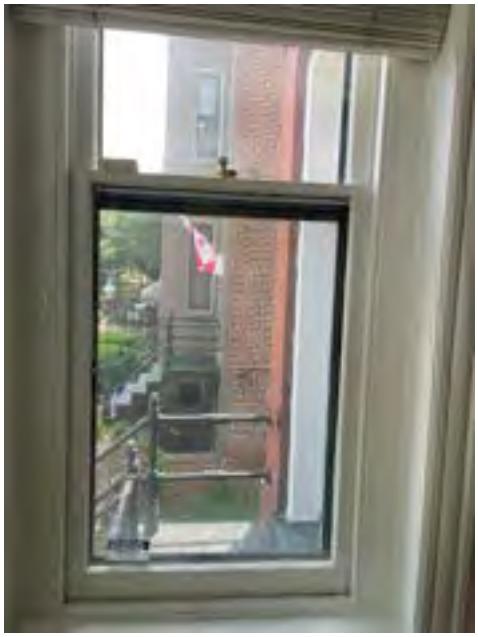



17.3.4 Doors and Windows

Recommended Change

PAINTED SHUT WINDOWS

Free all painted shut/open windows so that they open and close freely, and then test all windows for operability.


17.3.5 Doors and Windows

Recommended Change

DAMAGED WINDOW SASH

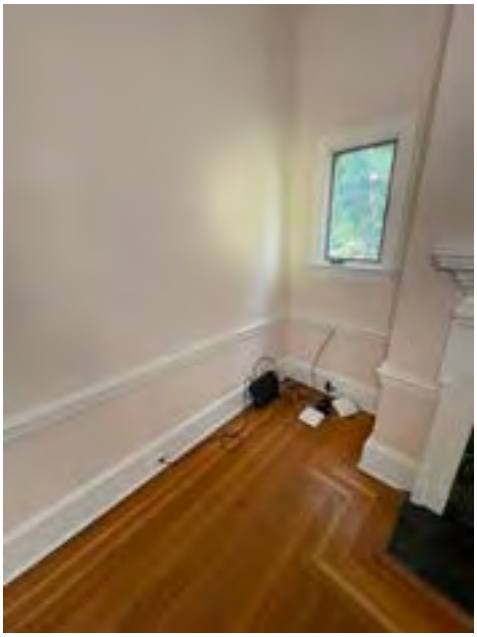
Repair or replace the 3 damaged window sashes in the carriage house.


17.3.6 Doors and Windows

Recommended Change

DETERIORATED CASEMENT WINDOW SILL

Replace the deteriorated window sills for all four casement windows in the main house.



17.3.7 Doors and Windows

Recommended Change

LOOSE DOOR HANDLE AND LOCK MECHANISM

Secure the loose door handle and lock mechanism for the carriage health bathroom

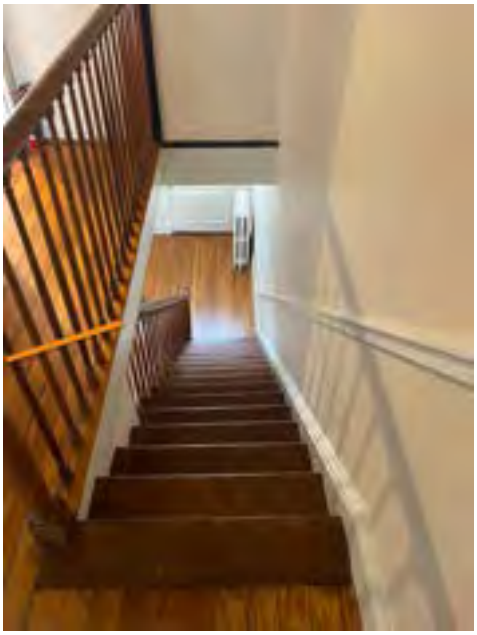
17.5.1 Stairways and Railings

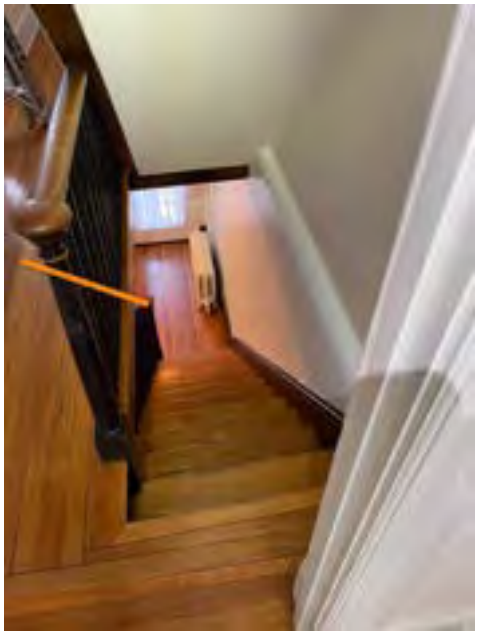
Recommended Change

MISSING INTERIOR HANDRAIL

Install the missing interior handrail.

All stairs with 4 or more risers should have a handrail.





17.5.2 Stairways and Railings

Recommended Change

MISSING INTERIOR NEWEL POST CAPS

Install the missing interior newel post caps.

17.5.3 Stairways and Railings

Recommended Change

NON-STANDARD INTERIOR STAIRWAY DIMENSIONS

BASEMENT

Out-of-Level Treads, Risers In Excess of 7 3/4" in Height, Excessive Riser Openings

Modify the interior stairs that have non-standard dimensions so that the stairs are level and also have both consistent riser heights and tread depths in order to prevent tripping.

Although stairs should be installed consistent with the specific guidance from your municipality, generally stair treads should be level and should be at least 36" wide and 10" deep, risers should be between 4" and 7 3/4" high, there should not be a height difference between risers or depth difference in treads in excess of 3/8", and the resulting slope of the stair should not be more than 42 degrees from the level of the ground. A landing should be present on every staircase for at least every 12 vertical feet.

18: MAIN HOUSE APPLIANCES

Information

General: Things You Need to Know About Your Appliances

Kitchen and laundry appliances are machines, each with a highly specialized function. They are so frequently used that they experience wear and tear more quickly than any other machines in your house. So, this is what you need to know about your appliances:

Your appliances will eventually need replacement.

Appliance lifespans don't depend on their age; appliances last because of how they are engineered, manufactured, and used. To find the relative age of your appliances, use the pictures of the model and serial number included in your report and refer to both appliance411.com and the InterNACHI Appliance Lifespan Reference.

If your appliances are new enough, activate your warranties. Remember that your appliances need to be installed correctly to be protected by the manufacturer's warranties, recalls, and your insurer. If your home inspection report identifies solutions regarding installing an appliance, it is because manufacturer safety features and installation instructions are all pretty standard, and solutions are easy to locate.

There are so many appliances that maintenance is mysterious for most homeowners, which is okay. Do what you can to install your appliances correctly, develop simple maintenance routines, and proactively plan for replacement.

Proactive replacement plans will either help you budget for new appliances or insure your current ones.

Appliance insurance is called a "home warranty," It can be a helpful replacement strategy. Having a home warranty is partially like having a building superintendent and partly like having insurance, but they are not a perfect solution. Discuss them with your agent to get their opinion.

Refrigerator/Freezer:
Refrigerator/Freezer
Manufacturer & Data Tag
Kitchen-aid

Refrigerator/Freezer: No Visible Data Tag

The manufacturer's data tag was not visible and so the model and serial numbers were not accessible. An definite age for the appliance cannot be determined.

Refrigerator/Freezer: Features

Ice Maker, Separated/Top-Mounted Mechanicals

Refrigerator/Freezer: Functional

At the time of the inspection, the refrigerator/freezer operated using standard controls. The calibration of the internal temperature of the appliance, nor the function of any compressor, condenser or fan components is within the scope of the Inspection.

Dishwasher: Dishwasher Manufacturer & Data Tag

Kitchenaid

Dishwasher: Dishwasher Type

Standard

Range Oven or Cooktop: Range, Oven, or Cooktop Manufacturer & Data Tag

Maytag

Dishwasher: Backflow Protection

Unknown

Range Oven or Cooktop: Installation Type

Range

Range Oven or Cooktop: Heat Source

Gas

Range Oven or Cooktop: Features

Self-Cleaning

Microwave Cooking Equipment: Microwave Manufacturer & Data Tag
Magic Chef

Microwave Cooking Equipment: No Visible Data Tag

The manufacturer's data tag was obscured and the model and serial numbers were not accessible, so the specific age cannot be determined.

Microwave Cooking Equipment: Installation
Countertop

Microwave Cooking Equipment: Microwave Manufacturer & Data Tag
Magic Chef

Microwave Cooking Equipment: Installation
Oven/Microwave Combination

Kitchen Exhaust Fan: Exhaust Fan Type
None

Clothes Dryer: Clothes Dryer Manufacturer & Data Tag
Whirlpool

Clothes Dryer: Heat Source
Electric

Clothes Dryer: Laundry Installation
Combined/Vertical Fabrication

Clothes Washer: Type
Upright

Clothes Washer: Plumbing Supply
Unknown

Clothes Washer: Plumbing Drainage
Not Visible

Solutions

18.2.1 Refrigerator/Freezer

Recommended Change

CRACKED REFRIGERATOR DOOR GASKET

Replace the torn door gasket on the refrigerator/freezer door so that cooling chamber properly seals when closed.

18.2.2 Refrigerator/Freezer

Recommended Change

NON-FUNCTIONAL ICE MAKER

Correct the built-in ice maker.

The ice maker did not make ice during the inspection; verify that there is a functioning water supply to the fridge and that the ice maker works.

18.2.3 Refrigerator/Freezer

DIRTY REFRIGERATOR COILS

Normal Maintenance

Clean the dirty refrigerator/freezer coils.

18.4.1 Range Oven or Cooktop

DAMAGED CONTROL PAD

Recommended Change

Repair the damaged control pad.

18.4.2 Range Oven or Cooktop

DETERIORATED DOOR GASKET

Recommended Change

Replace the deteriorated door gasket so that the heating chamber seals well when closed.

18.6.1 Microwave Cooking Equipment

NON-FUNCTIONAL MICROWAVE

Normal Maintenance

Repair or replace the non-functional microwave cooking equipment.

18.9.1 Clothes Washer

MISSING CLOTHES WASHING MACHINE DRIP PAN

Recommended Change

Install the missing drip pan under the clothes washer, and install either a water alarm or a drain line to a waste line.

19: CARRIAGE HOUSE APPLIANCES

Information

Refrigerator/Freezer: Refrigerator/Freezer Manufacturer & Data Tag
LG

Refrigerator/Freezer: No Visible Data Tag

The manufacturer's data tag was not visible and so the model and serial numbers were not accessible. An definite age for the appliance cannot be determined.

Refrigerator/Freezer: Functional

At the time of the inspection, the refrigerator/freezer operated using standard controls. The calibration of the internal temperature of the appliance, nor the function of any compressor, condenser or fan components is within the scope of the Inspection.

Food-Waste Disposer: Food-Waste Disposer Manufacturer & Data Tag
In-sink-erator

Food-Waste Disposer: Functional

At the time of the inspection, the food-waste disposer operated using standard controls.

Range Oven or Cooktop: Range, Oven, or Cooktop Manufacturer & Data Tag
Hotpoint

Range Oven or Cooktop: No Visible Data Tag

The manufacturer's data tag was not visible and may be located on the appliance in a position that is obscured when the appliance is installed. The model and serial numbers were not accessible, so the specific age cannot be determined.

Range Oven or Cooktop: Installation Type
Range

Range Oven or Cooktop: Heat Source
Gas

Range Oven or Cooktop: Features
Self-Cleaning

Range Oven or Cooktop: Functional

At the time of the inspection, the range, stove, or oven operated using standard controls and all burners generated heat. Neither the calibration of the internal temperature of the appliance, nor the function of any broiler or fan components is within the scope of the Inspection.

Kitchen Exhaust Fan: Exhaust Fan

Type

Stand Alone Range Hood

Kitchen Exhaust Fan: Functional

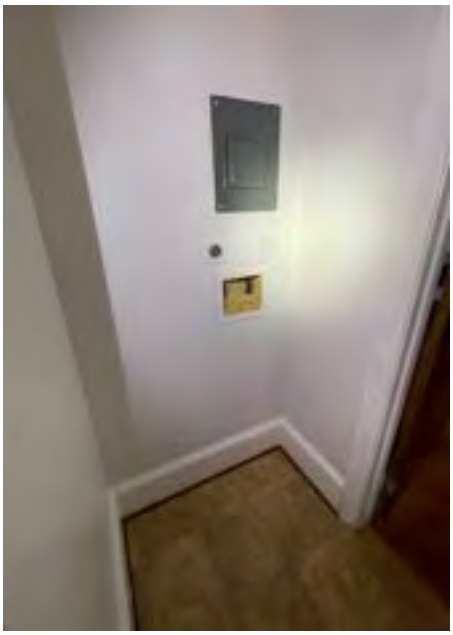
The kitchen exhaust fan operated using standard controls and created a draft in the kitchen at the time of the inspection. If the discharge type and location was observed, that information will be noted in the “Insulation and Ventilation” section of this report.

Clothes Dryer: Electric Dryer Hook-up Available

There available electric power source for the dryer has an outlet in the pictured configuration. when you purchase a dryer, purchase a corresponding plug from the dryer’s manufacturer.

Clothes Washer: Laundry Hook-up Available

There is an available power supply and plumbing for a washer and dryer, although the appliances are not present



Clothes Washer: Plumbing Supply
Grey Box

Clothes Washer: Plumbing Drainage
Grey Box

STANDARDS OF PRACTICE

Main House Roof and Drainage
I. The inspector shall describe the methods used to inspect the roof structure and roof covering.

II. The inspector shall describe and inspect:

1. the roof covering materials;
2. the roof drainage system; and
3. the flashing around skylights, chimneys, and other roof penetrations.

III. If indications are observed, the inspector shall report as in need of correction

1. damage to roofing members or covering;
2. inadvisable drainage techniques;
3. flashing flaws; and
4. active roof leaks.

IV. The inspector is NOT required to:

1. walk on any roof surface, given that walking on roof surfaces risks the well-being of the inspector and the condition of the roofing materials;
2. remove snow, ice, insulation, debris or other materials that limit the observation of the roof surfaces
3. inspect antennae, interiors of vent systems, satellite dishes, lightning arresters, de-icing equipment, and similar attachments or installed accessories; and
4. predict the service life expectancy of the roofing members; warrant or certify the roof; or confirm proper fastening or installation of any roof-covering material.

Ground-level Addition Roof and Drainage
I. The inspector shall describe the methods used to inspect the roof structure and roof covering.

II. The inspector shall describe and inspect:

1. the roof covering materials;
2. the roof drainage system; and
3. the flashing around skylights, chimneys, and other roof penetrations.

III. If indications are observed, the inspector shall report as in need of correction

1. damage to roofing members or covering;
2. inadvisable drainage techniques;
3. flashing flaws; and
4. active roof leaks.

IV. The inspector is NOT required to:

1. walk on any roof surface, given that walking on roof surfaces risks the well-being of the inspector and the condition of the roofing materials;
2. remove snow, ice, insulation, debris or other materials that limit the observation of the roof surfaces
3. inspect antennae, interiors of vent systems, satellite dishes, lightning arresters, de-icing equipment, and similar attachments or installed accessories; and
4. predict the service life expectancy of the roofing members; warrant or certify the roof; or confirm proper fastening or installation of any roof-covering material.

Carriage House Roof and Drainage
I. The inspector shall describe the methods used to inspect the roof structure and roof covering.

II. The inspector shall describe and inspect:

1. the roof covering materials;
2. the roof drainage system; and
3. the flashing around skylights, chimneys, and other roof penetrations.

III. If indications are observed, the inspector shall report as in need of correction

1. damage to roofing members or covering;

2. inadvisable drainage techniques;
3. flashing flaws; and
4. active roof leaks.

IV. The inspector is NOT required to:

1. walk on any roof surface, given that walking on roof surfaces risks the well-being of the inspector and the condition of the roofing materials;
2. remove snow, ice, insulation, debris or other materials that limit the observation of the roof surfaces
3. inspect antennae, interiors of vent systems, satellite dishes, lightning arresters, de-icing equipment, and similar attachments or installed accessories; and
4. predict the service life expectancy of the roofing members; warrant or certify the roof; or confirm proper fastening or installation of any roof-covering material.

Building Exterior
I. The inspector shall inspect:

1. the exterior wall-covering materials;
2. accessible flashing and trim;
3. eaves, soffits, and fascias where accessible from the ground level;
4. all exterior doors; and
5. a representative number of windows;

II. The inspector shall describe:

1. the type of exterior wall-covering materials.

III. The inspector is not required to inspect, operate, or describe:

1. screens, security measures, storm windows, shutters, or exterior accent lighting;
2. determine the integrity of multiple-pane window glazing or thermal window seals;
3. inspect for safety-type glass; or
4. items that are not visible or readily accessible from the ground, including window and door flashing.

Lot and Landscaping
I. The inspector shall inspect:

1. attached and adjacent decks, porches, patios, and balconies;
2. entry walkways, stairs, steps, stoops, stairways and ramps;
3. associated railings, guards, and handrails;
4. vegetation, grading, surface drainage, and retaining walls that are likely to adversely affect the building;
5. vehicle access to the property, driveways, and parking.

II. The inspector shall report as in need of correction:

1. any improper spacing between intermediate balusters, spindles and rails.

III. The inspector is not required to inspect, operate, or describe:

1. underground items or utilities;
2. fences, boundary walls, and similar structures;
3. erosion-control or earth-stabilization measures;
4. geological, geotechnical, hydrological or soil conditions;
5. seawalls, breakwalls or docks;
6. wells or springs; swimming pools or spas; inspect wastewater treatment systems, septic systems or cesspools; inspect irrigation or sprinkler systems; drainfields or dry wells;
7. exterior solar, wind, or geothermal systems; or
8. recreational facilities, playground equipment, or outbuildings other than garages and carports.

Fire Safety
The inspector shall describe the presence of:

1. smoke and carbon monoxide detectors and alarms;
2. doors that display fire-ratings; and
3. fire-suppression sprinkler fixtures.

The inspector shall report as in need of correction:

1. the absence of smoke detectors;
2. visible fire-break defects and the absence of spring-loaded hinges;
3. visible defects in fire suppression sprinkler systems.

The inspector is not required to inspect, operate or test:

1. any fire, smoke, or carbon-monoxide detectors;
2. any alarm, warning, or signaling systems;
3. the adequacy of the fire-break in any inaccessible area; or
4. any fire-break, automated mechanical response, or fire-suppression sprinkler system.

Electrical System
I. The inspector shall inspect:

1. the service entrance conductors; service drop, attachment point, drip loops and conduit;
2. the electric meter and base, grounding equipment, and main overcurrent device and disconnect, wherever accessible;
3. interior components of service panels and subpanels, panelboards, as well as branch circuit conductors, over-current protection devices, and the compatibility of their ampacities and voltages;
4. a representative number of switches, installed ceiling fans, lighting fixtures and receptacles, including receptacles observed and deemed to be arc-fault circuit interrupter (AFCI)-protected using the AFCI test button, where possible; and
5. the polarity and grounding of all receptacles within six feet of interior plumbing fixtures, and all receptacles in the garage or carport, and on the exterior of inspected structures; and all ground-fault circuit interrupter receptacles and circuit breakers observed and deemed to be GFCIs using a GFCI tester, where possible.

II. The inspector shall describe:

1. the main service and main disconnect amperage rating, if labeled;
2. location of main disconnect(s) and subpanels; and
3. the predominant branch circuit wiring method observed.

III. The inspector shall report as in need of correction:

1. deficiencies in the integrity of the service-entrance conductors insulation, drip loop, and vertical clearances from grade and roofs;
2. any unused circuit-breaker panel opening that was not filled;
3. the presence of solid conductor aluminum branch-circuit wiring, if readily visible; and
4. any tested receptacle in which power was not present, polarity was incorrect, the cover was not in place, the GFCI devices were not properly installed or did not operate properly, evidence of arcing or excessive heat, and where the receptacle was not grounded or was not secured to the wall.

IV. The inspector is not required to:

1. conduct voltage-drop calculations, verify the service ground, or determine the amperage or voltage of the main service equipment, if not visibly labeled;
2. dismantle any electrical equipment and remove panel-board cabinet covers or dead fronts, as well as insert any tool, probe or device into the main panelboard, sub-panels, distribution panelboards, or electrical fixtures;
3. operate, reset, or determine the labeling accuracy of over-current protection devices or overload devices, as well as activate or operate electrical systems or branch circuits that are not energized, shut down, or are otherwise inoperable or unsafe to operate;
4. inspect ancillary wiring, low-voltage systems, or components not a part of the primary electrical power distribution system, including: telephone, security systems, cable TV or internet, intercoms, spark or lightning arrestors, exterior lighting, electrical de-icing equipment, swimming pool wiring, time-controlled devices, or remote-control devices; and
5. inspect private or emergency electrical supply sources, including but not limited to: generators, batteries, and electrical storage facilities, or windmills, photovoltaic solar collectors, geothermal, and other renewable energy systems.

Plumbing System
I. The inspector shall inspect:

1. the main water and fuel supply shut-off valves;
2. the water heating equipment;
3. fuel storage and fuel distribution systems;
4. interior water supply and distribution systems by running the water all accessible fixtures and faucets;
5. the functional flow for all accessible fixtures by running the water at least one proximate fixture, if accessible;
6. the functional drainage all accessible sinks, tubs and showers with an active water supply;
7. all toilets for proper operation by flushing;
8. the interior drain, waste and vent system; and
9. sewage ejectors pumps, and related piping, if present.

II. The inspector shall describe:

1. whether the water supply is public or private based upon observed evidence;

2. the location of the main water and fuel supply shut-off valves;
3. the location of any observed fuel-storage system; and
4. the water heating equipment, including the labeled capacity, energy source, venting connections, temperature/pressure-relief (TPR) valves, and seismic bracing; and
5. interior waste, drain, and vent piping materials.

III. The inspector shall report as in need of correction:

1. deficiencies in the water supply detectable when viewing the functional flow in two fixtures operated simultaneously;
2. deficiencies in the installation of hot and cold water faucets;
3. active plumbing water leaks that were observed during the inspection; and
4. toilets that were damaged, had loose connections to the floor, were leaking, or had tank components that did not operate.

IV. The inspector is NOT required to:

1. inspect: wells, well pumps, and water storage related equipment; water treatment, conditioning, softening, or filtration systems; water storage tanks, pressure pumps, or bladder tanks; solar, geothermal, and other renewable energy water heating systems; manual or automatic fire-extinguishing sprinkler systems and landscape irrigation systems; wastewater treatment, septic, or other sewage disposal systems; clothes washing machines or their connections;
2. evaluate or determine: the wait time to obtain hot water at fixtures, or perform testing of any kind to water heater elements; the capacity, temperature, age, life expectancy or adequacy of the water heater; the water quantity, quality, volume, temperature, potability, pressure, reliability, or flow rate at the property or at individual fixtures; well water quantity; existence or condition of polybutylene plumbing; compliance with conservation, energy or building standards; the design or sizing of any water, waste, venting components, fixtures or piping; the effectiveness of anti-siphon, back-flow prevention or drain-stop devices; the structural integrity or leakage of whirlpool tubs, saunas, pools, or spas; whether there are sufficient clean-outs for effective cleaning of drains; fuel storage tanks or supply systems; inspect or test for gas or fuel leaks, or indications thereof; or
3. test, operate, open or close: sealed plumbing access panels; any valves, including safety controls, manual stop valves, temperature/pressure-relief valves, control valves, or check valves; shower pans, tubs, shower surrounds, or enclosures for leakage or functional overflow protection; pilot flames, whether ignited or not; well pumps or tanks, safety or shut-off valves, floor drains, lawn sprinkler systems, or fire sprinkler systems; any sauna, steam-generating equipment, pools, spas or fountains; whirlpool or spa jets, water force, or bubble effects; or ancillary or auxiliary systems or components, such as, but not limited to, those related to solar water heating and hot water circulation.

Combustion Equipment
I. The inspector shall inspect:

1. The main fuel supply shut-off;
2. fuel storage and fuel distribution systems, including for the presence of CSST;
3. readily accessible and visible portions of the vent systems, flues, and chimneys related to combustion powered systems and equipment;
4. readily accessible and visible portions of the fireplaces, including the lintels above the fireplace opening, clean-out doors and frames, as well as readily accessible and visible portions of the exterior and structure of chimneys;
5. solid fuel-burning appliances, including fuel burning fireplaces, stoves, fireplace inserts, and associated accessories, systems, and components; and
6. readily accessible and manually operable damper doors by opening and closing them.

II. The inspector shall describe:

1. the location of the main fuel supply shut-off valve;
2. the presence of CSST, noted with jurisdiction required guidances;
3. relevant and identifiable components of the combustion powered systems, including the labeled capacity, energy source, venting connections;
4. the type of fireplaces and solid fuel burning appliances; and
5. chimneys.

III. The inspector shall report as in need of correction:

1. combustion venting connections for HVAC and water heating equipment.
2. hazardous installation, insecure mounting, unusual sounds, or vibration level; and
3. fireplace clean-outs, firebox material, and hearth material not made of metal, pre-cast cement, or other non-combustible material;
4. visible evidence of firebox, hearth, hearth extension, and chimney joint separation, damage, or deterioration;
5. damage or deterioration of the hearth, hearth extension or chambers;
6. manually operated dampers that did not open and close;
7. chimney deterioration; and
8. the absence of smoke or carbon monoxide detectors, including the lack of a smoke detector in the same room as a fireplace and at least one per floor of the home.

IV. The inspector is NOT required to:

1. inspect or test for gas or fuel leaks, or indications thereof; determine the existing bonding method for gas supply plumbing including CSST; evaluate fuel quality, tanks, or storage systems;
2. activate thermostatically operated fans or pilot flames that are unlit at the beginning of the inspection;
3. inspect automatic fuel-fed devices, combustion and/or make-up air devices, heat-distribution assists, whether gravity-controlled or fan-assisted, fuel tanks or underground or concealed fuel supply systems, operate or test any security, fire or alarm systems or components, or other warning or signaling systems, fuel-burning fireplaces and appliances located outside the inspected structures;
4. inspect fire screens and doors, seals and gaskets, mantles and fireplace surrounds, fuel-burning fireplaces and appliances located outside the inspected structures, or the interiors of vent systems, flues, chimneys, fire chambers, heat exchangers, combustion air systems, or fresh-air intakes; or
5. evaluate or determine the adequacy of combustion air supply, supply components, make-up air devices, draft characteristics of chimneys and vent systems, or compliance with conservation, energy or building standards; or
6. discover firewall compromises, activate or evaluate manual or automatic fire extinguishing and sprinkler systems; operate or test smoke or carbon monoxide detectors; or
7. perform either a National Fire Protection Association (NFPA)-style, Phase I, fireplace, or chimney inspection.

Main House Heating and Cooling
I. The inspector shall inspect:

1. installed heating and cooling systems, using normal operating controls;
2. central heating and cooling system components readily openable access panels; and
3. filters, ducting exteriors, and distribution systems.

II. The inspector shall describe:

1. the location of thermostats for heating and cooling systems;
2. the heating and cooling methods and energy sources; and
3. relevant components for each type of heating and cooling system.

III. The inspector shall report as in need of correction:

1. any heating or cooling system that was inaccessible, did not operate, or was deemed partially operable.

IV. The inspector is NOT required to operate, inspect, describe, or determine the adequacy of:

1. the uniformity, temperature, flow, balance, distribution, size, capacity, BTU, or supply adequacy of the heating or cooling systems;
2. electronic thermostats, thermostat calibration, heat or cooling anticipation, or automatic setbacks, timers, programs or clocks;
3. heating or cooling systems when ambient temperatures or other circumstances are not conducive to safe operation or may damage the equipment;
4. electrical current, coolant fluids or gases, or coolant leakage;
5. air cleaning, filtering, and sanitizing devices;
6. units that are not permanently installed including portable window units and through-wall units;
7. systems using ground source, water source, solar, and renewable energy technologies;
8. fuel tanks, fuel quality, automatic fuel feed devices, or underground or concealed fuel supply systems;
9. pilot flames that are unlit at the beginning of the inspection; or
10. the interior of flues, chimneys, fire chambers, heat exchangers, combustion air systems, fresh-air intakes, humidifiers, dehumidifiers, electronic air filters, geothermal systems, or solar heating systems.

Insulation and Ventilation
I. The inspector shall inspect:

1. insulation, vapor retarders, and ventilation in unfinished spaces, including attics, crawlspaces and foundation areas;
2. mechanical exhaust systems in the kitchen, bathrooms, and laundry area; and
3. clothes dryer exhaust systems.

II. The inspector shall describe:

1. the type of insulation and vapor retarders observed in unfinished spaces, including attics, crawlspaces, and foundation areas; and
2. the approximate average depth of insulation observed at the unfinished attic floor area or roof structure.

III. The inspector shall report as in need of correction:

1. the absence of ventilation in unfinished spaces;
2. the absence of insulation in unfinished spaces at surfaces adjacent to lived-in spaces or spaces serviced by an HVAC system; and
3. hazardous or ineffective kitchen, bathroom, or laundry ventilation.

IV. The inspector is not required to:

1. enter any unfinished spaces that are not readily accessible, or where entry could cause damage or, in the inspector's opinion, pose a safety hazard;
2. move, touch or disturb insulation or vapor retarders;
3. break or otherwise damage the surface finish or weather seal on or around access panels or covers;
4. identify the composition or R-value of insulation material;
5. activate thermostatically operated fans;
6. determine the types of materials used in insulation or wrapping of pipes, ducts, jackets, boilers or wiring; or
7. determine the adequacy of ventilation.

Carriage House Heating and Cooling
I. The inspector shall inspect:

1. installed heating and cooling systems, using normal operating controls;
2. central heating and cooling system components readily openable access panels; and
3. filters, ducting exteriors, and distribution systems.

II. The inspector shall describe:

1. the location of thermostats for heating and cooling systems;
2. the heating and cooling methods and energy sources; and
3. relevant components for each type of heating and cooling system.

III. The inspector shall report as in need of correction:

1. any heating or cooling system that was inaccessible, did not operate, or was deemed partially operable.

IV. The inspector is NOT required to operate, inspect, describe, or determine the adequacy of:

1. the uniformity, temperature, flow, balance, distribution, size, capacity, BTU, or supply adequacy of the heating or cooling systems;
2. electronic thermostats, thermostat calibration, heat or cooling anticipation, or automatic setbacks, timers, programs or clocks;
3. heating or cooling systems when ambient temperatures or other circumstances are not conducive to safe operation or may damage the equipment;
4. electrical current, coolant fluids or gases, or coolant leakage;
5. air cleaning, filtering, and sanitizing devices;
6. units that are not permanently installed including portable window units and through-wall units;
7. systems using ground source, water source, solar, and renewable energy technologies;
8. fuel tanks, fuel quality, automatic fuel feed devices, or underground or concealed fuel supply systems;
9. pilot flames that are unlit at the beginning of the inspection; or
10. the interior of flues, chimneys, fire chambers, heat exchangers, combustion air systems, fresh-air intakes, humidifiers, dehumidifiers, electronic air filters, geothermal systems, or solar heating systems.

Structural System
I. The inspector shall inspect and describe:

1. the type of foundation access;
2. the type of perimeter foundation, if present;
3. other identifiable structural supports, if present; and
4. internal water management systems, if present.

II. If indications are observed, the inspector shall report the following condition as being in need of correction:

1. compromised structural members;
2. wood in contact with or near soil;
3. active water penetration; and
4. active foundation movement.

III. The inspector is NOT required to:

1. provide any engineering or architectural service or analysis, which includes reporting on the adequacy of any structural system or component;
2. identify the size, spacing, span or location or determine the adequacy of foundation bolting, bracing, joists, joist spans or support systems;
3. enter any area that is hazardous or not readily accessible; or
4. operate any part of a moisture control system.

Pest and Vermin
I. The inspector shall describe the presence of:

1. visible signs of the activity of wood destroying organisms;
2. readily accessible damage attributable to wood destroying organisms that can be identified without invasive testing;
3. visible signs of non-wood destroying insects infestation, birds, and small mammals; and
4. evidence of pest treatment and past mitigation techniques used at the property.

II. The inspector shall report as in need of expert evaluation and consultation:

1. indicators of wood destroying organism activity, regardless of identifiable compromise to the structure of the building;
2. the activity of non-wood destroying insects, birds, and small mammals for risks to the health of occupants of the home; and
3. past pest treatment.

III. The inspector is not required to:

1. inspect, operate, or test any pest treatment techniques, including traps, poisons, netting, barriers, or removal;
2. evaluate the integrity of any structural component of the home known to be damaged by pests;
3. enter or observe any area of the home that would require damage to property or would cause the inspector to risk harms;
4. evaluate any fire-break, insulation, electrical, structural, hvac, or cosmetic system possibly compromised by the activity or presence of pests; or
5. determine if any pests or pest treatments are currently active on the property at the time of the inspection or any time after the inspection.

Carriage House Structural System
I. The inspector shall inspect and describe:

1. the type of foundation access;
2. the type of perimeter foundation, if present;
3. other identifiable structural supports, if present; and
4. internal water management systems, if present.

II. If indications are observed, the inspector shall report the following condition as being in need of correction:

1. compromised structural members;
2. wood in contact with or near soil;
3. active water penetration; and
4. active foundation movement.

III. The inspector is NOT required to:

1. provide any engineering or architectural service or analysis, which includes reporting on the adequacy of any structural system or component;
2. identify the size, spacing, span or location or determine the adequacy of foundation bolting, bracing, joists, joist spans or support systems;
3. enter any area that is hazardous or not readily accessible; or
4. operate any part of a moisture control system.

Interior Surfaces
I. The inspector shall inspect:

1. floors, walls and ceilings;
2. stairs, steps, landings, stairways and ramps;
3. railings, guards and handrails;
4. a representative number of doors and windows by opening and closing them; and
5. countertops and a representative number of installed cabinets.

II. The inspector shall report as in need of correction:

1. improper spacing between intermediate balusters, spindles and rails for steps, stairways, guards and railings; and
2. any window that was obviously fogged or displayed other evidence of broken seals

III. The inspector is NOT required to:

1. move: furniture, stored items, or any coverings, such as carpets or rugs, in order to inspect the concealed floor structure; suspended-ceiling tiles; or any household appliances;

2. inspect: paint, wallpaper, window treatments, floor coverings and other finish treatments; coatings on and the hermetic seals between panes of window glass; equipment housed in the garage; central vacuum systems; recreational facilities; any security systems or its components;
3. operate: elevators or remote controls;
4. evaluate: the fastening of islands, countertops, cabinets, sink tops or fixtures; any security bar release and opening mechanisms, whether interior or exterior, including their compliance with local, state or federal standards; any system, appliance or component that requires the use of special keys, codes, combinations or devices; or
5. exhaustively discover firewall compromises or inspect the firewall in non-readily accessible places.

IV. During Blue Tape inspections, the inspector:

1. shall use blue painter's edging tape to demark all visible finishing flaws, meaning blemishes and damage in the walls, floors, ceiling, and trim not normally considered within the scope of a home inspection;
2. shall verbally describe any locations that are visible but not accessible enough to be marked with blue tape;
3. shall report as in need of correction any visible finishing flaws;
4. shall report as in need of correction the installation of components or equipment that will result in a sub-optimal performance of any component or equipment; but
5. is not required to enter, access, activate, or alter any location, system, or component not normally considered to be part of a home inspection; and also
6. is not required to mark or report upon all of the issues or perceived flaws described by the client.

Main House Appliances
The presence, installation, and function of appliances is outside the scope of a Home Inspection.

I. The inspector shall, as a courtesy however, observe and describe the condition, type, and normal operation of the following appliances where visible, operable, accessible, and permanently installed:

1. ovens, ranges, surface cooking appliances, and microwave ovens, including associated tilt-guards, latches, and mechanical exhaust systems;
2. full size refrigerators, freezers, and combination refrigerator/freezers;
3. dishwashing machines and food waste grinders by using normal operating controls to activate the primary function; and
4. installed clothes washing and clothes drying machines.

II. The inspector shall describe as in need of correction:

1. inoperable or partially operable appliances
2. hazardous installation, insecure mounting, unusual sounds, or vibration level; and
3. improperly installed doors, handles, seals, plumbing connections and ventilation connections.

III. The inspector is NOT required to operate, inspect, or confirm the function or calibration of:

1. appliance thermostats, heating elements, or self-cleaning oven cycles;
2. indicator lights, door seals, timers, clocks, timed features, and other specialized features of the appliance; auxiliary components, controls, or features of an inspected appliance;
3. any part of microwave oven other than installed mechanical exhaust systems, or a microwave system for radiation leakage;
4. garbage compactors, kilns, toasters, ice makers, coffee makers, can openers, bread warmers, warming drawers, blenders, instant hot-water dispensers, or any other small, ancillary appliances or devices; or
5. appliances that are not permanently installed.

Carriage House Appliances
The presence, installation, and function of appliances is outside the scope of a Home Inspection.

I. The inspector shall, as a courtesy however, observe and describe the condition, type, and normal operation of the following appliances where visible, operable, accessible, and permanently installed:

1. ovens, ranges, surface cooking appliances, and microwave ovens, including associated tilt-guards, latches, and mechanical exhaust systems;
2. full size refrigerators, freezers, and combination refrigerator/freezers;
3. dishwashing machines and food waste grinders by using normal operating controls to activate the primary function; and
4. installed clothes washing and clothes drying machines.

II. The inspector shall describe as in need of correction:

1. inoperable or partially operable appliances
2. hazardous installation, insecure mounting, unusual sounds, or vibration level; and
3. improperly installed doors, handles, seals, plumbing connections and ventilation connections.

III. The inspector is NOT required to operate, inspect, or confirm the function or calibration of:

1. appliance thermostats, heating elements, or self-cleaning oven cycles;
2. indicator lights, door seals, timers, clocks, timed features, and other specialized features of the appliance; auxiliary components, controls, or features of an inspected appliance;
3. any part of microwave oven other than installed mechanical exhaust systems, or a microwave system for radiation leakage;
4. garbage compactors, kilns, toasters, ice makers, coffee makers, can openers, bread warmers, warming drawers, blenders, instant hot-water dispensers, or any other small, ancillary appliances or devices; or
5. appliances that are not permanently installed.

June 26, 2023

Justin C. Ahasteen
750 First Street, NE #940
Washington, DC 20002

Attn.: Mr. Ahasteen

Re: 11 D Street, SE, Washington, DC 20003
Our Ref.: 23-054-00

Site Visit Report No. 01

Date: June 14, 2023

Time: 2:00PM

Present: Marlena Forster-Mason - NNWO
Seth Takoch - Woods • Peacock

Scope:

Our observations of structural items were limited to a visual observation of the property located at 11 D Street, SW. The visual inspection was to observe and document any structural deficiencies or concerns, paying special attention to items referenced in the Buyers Inspection Report (BIR) prepared by District Home Pro and dated May 21, 2022. The survey was limited to visual observations only and no demolition or removal of existing construction materials were performed.

The scope of this report is to review and document the observations and provide structural recommendations for further investigation, remediation, or repairs, where needed. Furthermore, the report will also add comment to the planned conversion of the building from residential use to commercial use.

Property Status:

The residential property noted above was recently purchased by the NNWO and is currently unoccupied. The property consists of a main house, located on the north end of the property, along D Street, and a smaller carriage house structure located on the south end of the property.

The main house consists of three (3) above grade floor levels and one (1) below grade basement and crawlspace area. The carriage house is a two-story, above grade structure.

The main structural framing consists of wood joists and girders supported by brick or wood bearing walls.

List of Non-conforming Items:

1. ***Roof Girder***

    a. Observations:

    Based on our observations, it appears that the existing, main east-west timber roof girder has split, see Photo 1 & Photo 2, and subsequently has lost a significant amount of its original structural capacity. As further evidence of the deficiency, the east end bearing of the girder has undergone a significant amount of rotation, see Photo 3.

    Additionally, the west end bearing, see Photo 4, doesn't appear to bear directly on any exterior wall framing, but is rather side-nailed to vertical wood studs. It was unclear during our inspection what was supporting the vertical wood studs.

    The timing and cause of the failed roof girder is unknown.

    This item was identified in the BIR, item 2.2.1.

    b. Recommended Actions:

    We recommend the entirety of the roof structure be further surveyed and analyzed to determine the solution for replacing the existing timber girder.

    The survey would determine the existing member size and spacing of the existing wood joists. The survey would also verify the bearing condition of the girder and joists to determine if any modification to the load path is required.

    In addition to sizing the girder correctly, this analysis effort would determine an existing roof capacity that could be used to verify code compliance and provide guidance for any future modifications or additions to the roof.

Photo 1 - Split/Failed Roof Girder

Photo 2 – Split/Failed Roof Girder – Zoom-in

Photo 3 – Roof Girder Bearing at East End

Photo 4 – Roof Girder Bearing at West End

2. Northern Roof Girder

a. Observations:

The west end of the timber girder, located to the north of the girder observed in Photo 1 thru Photo 4, may not be fully bearing on the existing brick bearing wall. As observed in Photo 5, there appears to be a loose brick that has partially rotated out from under the timber bearing.

b. Recommended Actions:

This girder bearing should be reconstructed to ensure the existing bearing condition is adequate.

Similar to as proposed in Item 1 above, we propose that this effort also include an analysis of the existing girder and supporting roof joists to verify they have adequate capacity to support the code required roof loads.

Photo 5 – North Side Roof Girder at Bearing

3. Joist Notching for Plumbing Fixtures

a. Observations:

It was conveyed to us that a water pipe had burst in April of 2023 causing a significant amount of damage to the existing architectural ceiling finishes of the first and second floors. As a result of the water leakage, the existing wood lath and gypsum board ceiling finish has been removed.

Observed in this damaged area of the second-floor framing, plumbing fixtures were installed at some point after the installation of the wood joist framing and, while doing so, the wood joists were cut and notched to install the piping for the fixtures. The notching is significant at two locations and shown in Photo 6 and Photo 7.

Additionally, we observed up to four layers of gypsum board at the ceiling resulting in a higher dead load than typical for residential construction, see Photo 8. This could impact the floor capacity of all of the existing joists.

b. Recommended Actions:

The existing notched wood joist framing should be analyzed and reinforced, as needed, to provide adequate strength to support the required loads. Sistering of additional wood joists or steel plates to the sides of the notches is anticipated to be required, at a minimum.

Given the size and locations of the notches, as well as the locations of the piping, the replacement of the existing piping may be required to accommodate the strengthening of the joist(s).

For clarity of the report, sistering is a method of strengthening the existing wood members by tying together two, or more, adjacent members with screws or nails to increase the current strength of the existing framing.

Photo 6 – Second Floor Plumbing Notches in (E) Wood Joists

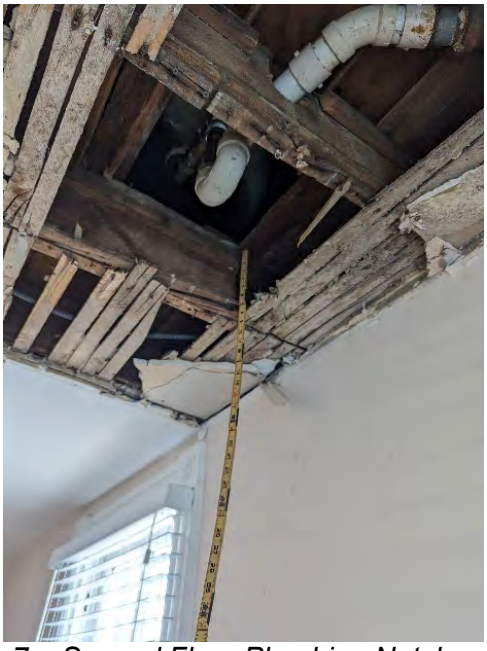


Photo 7 – Second Floor Plumbing Notches in (E) Wood Joists

Photo 8 – Multiple Layers of Gypsum Board on Ceiling

4. Basement Framing

a. Observations:

The wood floor joists and subfloor supporting the south end of the first floor is a newer construction compared to the floor framing to the north.

The main joists span east to west to the bearing walls and, at the existing chimney area, a double header was installed and is supporting four (4) of the floor joists. The header is supported on each end by double joists, see Photo 9. This is typical construction, however, we observed that the connection between the double header and the double joist does not appear to be adequately connected. As shown in Photo 10, Photo 11, and Photo 12, a single joist, joist hanger was cut in-half and used for each side of the double header connection to the double joists. No other connection between the double header and the double joists was observed. Furthermore, the double joists, spanning east-west, didn't appear to be sistered together along their length.

b. Recommended Actions:

The floor framing should be analyzed to verify adequate capacity in the floor system to support either residential or commercial floor loading.

Additionally, at a minimum, sistering of the existing double joists should be performed and reinforcing of the connection between the double header and double joist will be required. The connection repair may require temporary shoring and removal of framing elements to allow for the installation of a properly engineered hanger connection.

Photo 9 – Basement Header Framing

Photo 10 – Cut Joist Hanger – North Side

Photo 11 – Cut Joist Hanger – South Side

Photo 12 – Cut Joist Hanger – South Side

5. Crawl Space Framing

a. Observations:

Supplemental framing was added to strengthen the existing first floor framing in the central and northern sections of the property. This supplemental framing, shown in Photo 13 through Photo 16, has numerous deficiencies in the framing, connections, bracing, and support elements. More specifically, framing sections don't appear to be appropriately sized, connections are improperly sized or not correctly installed, stability and bracing wasn't apparent, and support/foundation elements are supported on loose dirt.

The broad instances of deficiencies generally apply across the entirety of the supplemental framing.

This item was identified in the BIR, item 14.2.2.

b. Recommended Actions:

Based on our observations, it is our opinion that the deficiencies are too numerous to fix individual elements and we recommend that the entirety of the floor area be reframed to support the code required floor loads.

Photo 13 – Crawl Space Framing

Photo 14 – Crawl Space Framing

Photo 15 - Crawl Space Framing

Photo 16 - Crawl Space Framing

6. Basement Foundation

a. Observations:

The existing east side foundation consists of a brick bearing wall with mortar parging on the inside. Deterioration of the parging and mortar is significant, see Photo 19.

A ground-supported concrete header was also present on this section of the east wall, see Photo 17. The adjacent brick coursing below the header would indicate the concrete header was installed at a later period of time, as the area below the header was likely an original framed opening in the foundation wall.

This item was identified, in part, in the BIR, item 14.2.1.

b. Recommended Actions:

Moisture will continue to deteriorate the existing brick, mortar, and parging. Solutions to resolve these issues will be required that may include waterproofing of the below grade foundation wall and/or damp proofing or the brick bearing wall. Subsequent repointing of the existing brick walls will likely be required.

Photo 17 – East Side Foundation Header

Photo 18 – East Side Foundation

Photo 19 – East Side Foundation Mortar and Parging Deterioration

7. Exterior East Wall Bowing

a. Observations:

The entire exterior wall, along the east side, is bowing outwards both horizontally and vertically. This bowing extends from top to bottom and front to back of the building, see Photo 20 and Photo 21. Similar bowing was not observed on the west side exterior.

We also observed two tie-rods that were installed connecting the east and west exterior walls between the horizontal steel channels. These locations are roughly located between the three windows shown on *Photo 22*. These rods were observed to still be tensioned, indicating they were still providing bracing as originally designed. *Photo 23* shows the rod penetrating through the exterior wall but also indicates a horizontal wood course in the brick, located to the right of the rod penetration.

b. Recommended Actions:

Further evaluation should be performed to determine appropriate solution of repair. Repairs may include the addition of additional lateral restraint ties and bed joint reinforcement to tie the brick bearing wall to the existing structure.

The initial approach, depending on other repairs, would be to document the current conditions and to check for movement periodically. This could include detailed photos, measuring the plumbness of the wall, and or having a 3D laser scan performed.

Destructive analysis of the brick wall may also be required to determine the assembly of the brick wall and to further understand the interaction between all of the bricks and the existing mortar.

Photo 20 – Bowing of West Exterior Wall

Photo 21 – Bowing of West Exterior Wall

Photo 22 – Horizontal Steel Channel – East Side

Photo 23 – Tie-Rod at First Floor – East Side

8. East Wall Rising Damp

a. Observations:

Water staining along the length of the east wall, along the bottom few courses of brick, was observed, see Photo 24 and Photo 25.

This item was identified, in part, in the BIR, item 14.1.1.

b. Recommended Actions:

Additional understanding of the existing foundation will be required to determine appropriate approach to mitigate the rising damp in the exterior walls.

Solution may include modifying the existing drainage adjacent the existing wall, installing a damp proof course, or modification to the interior, crawl space grade adjacent the exterior wall.

For clarity of the report, rising damp is the condition where moisture, typically from the ground, rises up a masonry wall by capillary action.

Photo 24 - Moisture in West Exterior Wall

Photo 25 – Moisture in West Exterior Wall

9. Exterior Wall Joints

a. Observations:

The east wall has been repointed and, in several areas, the mortar of the wall joints has de-bonded from the existing brick, exposing the existing mortar behind. We observed this mortar to be significantly deteriorated, see Photo 26 through Photo 29.

Gaps and voids in the bed joints were significant, see Photo 27 and Photo 29. We also observed the new mortar seemed significantly stronger than any of the existing mortar.

b. Recommended Actions:

The mortar joints in the areas of the rising damp seem to be most impacted and a wholistic approach for the restoration of the bearing walls needs to be considered.

As part of this effort, a mortar analysis should be conducted to determine the composition and compressive strength of the existing mortar as well as the compressive strength of the new mortar to determine if the two are compatible. Upon review of this analysis, it would be determined if the mortar would need to be repointed.

Photo 26 – Deterioration of Mortar Joint

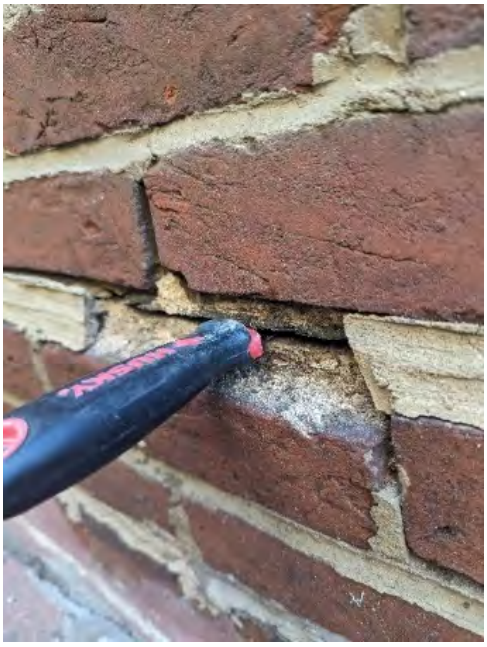


Photo 27 – Gap in Mortar Joint

Photo 28 – Separation of New Mortar

Photo 29 – Gap in Mortar Joint

10. Exterior Arching

a. Observations:

The bricks above the entry doorway and windows are showing signs of movement. Deterioration and cracking in the bed and head joints were apparent, with some being filled with new mortar to attempt to stabilize the movement.

This item was identified, in part, in the BIR, Section 14 introduction.

b. Recommended Actions:

Monitors should be considered to determine the extent of movement. Additionally, the use of horizontal bed joint reinforcing may be required to strengthen the existing arching and to stitch the cracking joints together.

Causing of the cracking and movement was not immediately apparent during our visual survey but evidence of foundation settlement wasn't apparent. This may indicate the joint movement may be a result of water infiltration and subsequent freeze/thaw cycles. Repointing of larger areas above the doors and windows would likely be required.

Photo 30 – North Facade

Photo 31 – Typical Cracking and Repointing of Mortar Joints Above Windows

Summary:

Based on the observations and subsequent recommendations of the deficiencies noted above, we do not recommend the occupancy of the property until additional survey, analysis, and repair or shoring of the existing roof framing has been completed.

Additionally, based on the observed floor framing, we do not recommend a commercial occupancy of the property until additional survey, analysis, and possible strengthening of the existing floor framing through the building has been completed.

We anticipate that the efforts noted above will likely require removal of existing ceiling finishes, as well as partial brick removal and exploration of the exterior of the building.

If you have any questions regarding this matter, please call. If this report meets with your approval, please distribute to all appropriate parties.

Sincerely,

Seth R. Takoch
Associate

Cory M. Sauer, PE
Sr. Principal