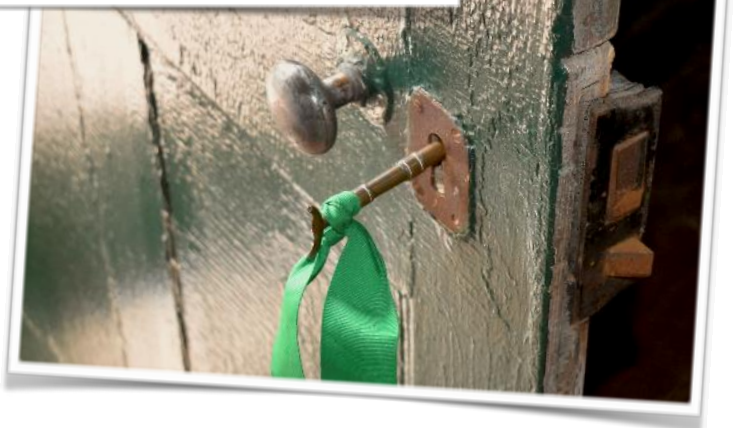


August 30, 22

Hayes Manor House

Edenton, Chowan County North Carolina

Site Visit Report



Hayes Manor House

Hayes Farm

Edenton, Chowan Co.

I. Background and Prelude

This site visit report is in response to a request by Samuel Dixon and Robert Leith, with the Edenton Historical Commission and Elizabeth Vann Moore Foundation, to offer technical restoration advice for repair needs and stabilization work for Hayes Manor. This request was for an initial and cursory walk-through inspection to identify priority repair needs for the house. Restoration Specialist John Wood, assisted with the site visit that took place on August 19, 2022. Property owner Susan Wood took time to walk us through the house and provided helpful information on maintenance issues and recent repair work. Susan pointed out repair needs and concerns that we might not have identified in the short time of our visit. She also has a wealth of knowledge about the history of the property and alterations made by the various owners.

Hayes Manor, constructed between 1814 - 1817 was listed on the National Register of Historic Places in March 1974. A PDF of the nomination can be found on the State Historic Preservation Office's webpage at this link: <https://files.nc.gov/ncdcr/nr/C00006.pdf>. Hayes also holds the distinction as one of three properties in Edenton that have been designated a National Historic Landmark - the others being the 1767 Chowan County Courthouse and Cupola House.

Documentation including measured drawings of Hayes was undertaken through the Historic American Building Survey (HABS) program. Digital copies of the HABS documentation can be found on the Library of Congress's website at the link below.

Hayes Manor, East Water Street vicinity, Edenton, Chowan County, NC Drawings from Survey HABS NC-3

<https://www.loc.gov/resource/hhh.nc0142.sheet?st=slideshow>

Historic Structure Report

A historic structure report is recommended for Hayes Manor as well as all historic structures on the property. An invaluable tool, a historic structure report (HSR) involves a detailed study of a building by professional consultants. HSRs typically includes sections

on the history of a building, an architectural description of the original structure and changes over time. The study also includes the current conditions and problems and treatment recommendations - for current and future action. HSRs can serve as an important record for future researchers, documentation, and a useful resource for interpretation. For additional information please refer to the National Park Service (NPS) Preservation Brief # 43, "*The Preparation and Use of Historic Structure Reports*" linked below.

<https://www.nps.gov/tps/how-to-preserve/briefs/43-historic-structure-reports.htm>

Documentation

Prior to starting on any interior and exterior work - including clean-up or removal of non-historic material (such as walls, enclosures), the house and property should be documented. High resolution photographs should be taken and include the building's site and environment, all sides of the buildings along with all interior spaces and architecturally important features. Photographs should be labeled and numbered (digital and/or printed) and keyed to a photo key plan - a floor and site plan with numbered photographs and arrows showing the view direction. Detailed photographs can be a useful tool for documentation purposes, restoration, and interpretation - such as for displaying before and after restoration images, and a record for property insurance.

Cultural Landscape Report

We also recommend a cultural landscape report (CLR) for the historic site. Cultural Landscape Reports are the primary guide to treatment and use of a cultural landscape. The documentation can help in identifying significant and historic features and characteristics along with understanding the historic development and use of a property over time. For addition information please refer to the National Park Service webpage on Cultural Landscapes linked below.

<https://www.nps.gov/subjects/culturallandscapes/research.htm>

Preservation Work - Best Practices - Lessons Learned

Maintaining the substantial frame manor house, over twenty historic support buildings, and the expansive cultural landscape will be challenging. Continuous maintenance needs, frequent repairs, service and replacement of mechanical, plumbing, and electrical systems, and operating expenses will be costly and involve considerable time and effort. Adding to this will be the challenge of locating qualified contractors/tradespeople/service professionals to perform various tasks.

Over the past twenty years the northeast region has experienced an increased number of natural disasters and severe weather events resulting in damage to cultural heritage properties – from minor to total loss. The region has also experienced frequent and heavy rainfall along with higher humidity and rising water table levels – increasing the challenges of maintaining older and historic properties.

How can repair, restoration, and other work at Hayes be manageable and cost-efficient? Even with the challenges mentioned above the choice of *materials* and *methods* for repairs and routine *maintenance* can make a *significant* difference in how long repairs will last. Selecting experienced and qualified tradespeople to perform work is also essential if the goal is to achieve longer-lasting and quality repairs - reducing future maintenance costs and to preserve the integrity of the historic structures.

Following an initial investment for priority repairs, upgrades, and necessary stabilization, additional work at Hayes can likely be accomplished in a cost-efficient way and spread-out into manageable phases. Below is a sample list of recommended approaches for “best practices” and efficient management of a historic property. The simple list is derived from over three-decades of lessons learned assisting non-profits and government-owned historic properties with technical restoration advice.

1. An initial assessment by qualified and experienced professionals (preservation/mechanical/electrical or other) to identify priority repair and stabilization needs.
2. Hiring qualified and experienced tradespeople to undertake priority repairs and necessary stabilization work. The experienced tradespeople should be familiar with the preservation context of the work to be undertaken. This work should include use of compatible materials and time-tested and proven methods for repairs.

3. Conducting a detailed condition assessment of the historic buildings by qualified and experienced building conservator/architect/structural engineer/preservation consultant. A Historic Structure Report is recommended for this step. The report should also include a disaster preparedness and risk assessment. Risk assessments focus on areas and features of buildings and landscapes (especially trees) at risk of damage or failure during severe weather events such as hurricanes.

4. Hiring qualified and experienced tradespeople familiar with the preservation context of the work to be undertaken. This work should include use of compatible materials and time-tested and proven methods for repairs.

5. Regular inspections, maintenance, repair work, temporary measures, and stabilization work as needed to prevent or mitigate further deterioration. *Note: The cost of performing routine maintenance over time is generally considerably less costly than replacement of deteriorated historic features.*

Below is an example of a successful re-roofing project at the Cupola House where a creative solution was sought for a cost-efficient way to install the best quality wood shingles available and under the guidance of a highly skilled wood shingle roofing expert. This project also provided a learning laboratory for area tradespeople and drew public and media interest from the community and beyond.

In 2009, the Cupola House Association hired Peter Post of Richmond, Virginia, a highly skilled and sought-after roofer to oversee the installation of a replacement wood shingle roof. Post has extensive knowledge on traditional wood shingle roofing. He has installed, repaired, and served as the project consultant on roofing work at Mount Vernon, Montpelier, Bacon's Castle, Smith's Fort, and numerous other projects in Virginia - along with the Cupola House and Norfleet House at Edgecombe Community College in Tarboro. Cupola House Association board members wanted to replace the deteriorated 1990s roof shingle roof with a longer lasting one. Post recommended top-quality and long lasting (50+ year) imported Alaskan Yellow Cedar singles for the project - a shingle he has used at Mount Vernon. Board members also wanted a period appropriate look with the new roof. However, the cost selecting high-quality roofing material and hiring an out-of-state wood shingle roofing specialist to perform the work would be expensive and likely exceed the project budget.

The cost savings solution that achieved the board's goal to install the best quality roofing on the Cupola House was to hire Post to oversee the roofing project and a local roofing contractor, Perry Roofing, to perform most of the work. Post worked closely with the Perry Roofing with hands-on guidance installing the new roof. Post undertook the most challenging parts of the roof - the hips and valleys. He also taught Perry Roofing how to hand-cut and install wood shingles in these areas - sharing his more than thirty years of experience and expertise. In the end, no corners were cut on this project. The Cupola House reroofing brought together two skilled and dedicated contractors who installed an accurate replica of an eighteenth-century wood shingle roof - and one that should last more than a half century.

Another cost-savings technique with a long-history of use are temporary repair measures - historically referred to as "farmer's patches". At the 1718 House in Edenton, temporary repairs from the eighteenth and nineteenth century still exist - and providing structural integrity to framing members. Temporary repair measures and stabilization work are used to slow-down or prevent further decay of historic fabric until major repairs can be performed. Examples of temporary repairs or patches includes using copper or zinc flashing to cover holes or openings, treating wood rot with wood preservatives to slow down decay, using lime mortar to patch areas of missing mortar (hold mortar back from surface - finish repointing can be done later), or adding temporary gutter downspout extensions with corrugated pipe to carry roof water rain water away from a foundation. The key to successful temporary repairs is too carefully think though any repairs to avoid causing further damage to historic fabric - especially from trapping moisture inside wood or brick.

Common Exterior Issues

In the past three decades the most common complaints that I hear from historic property owners is wood decay and paint failure. Foundation settlement, active termite (subterranean) infestation, and interior mold issues are the second most common complaint.

Below are common building complaints that I hear from historic property owners across the northeast region - listed in order of complaints.

1. Peeling paint (typically peeling down to the wood)

2. Exterior Mildew
3. Windowsill wood decay
4. Porch post and balustrade wood decay
5. Porch Flooring wood decay (typically the outer one to two feet)
6. Window sash (bottom rail) wood decay
7. Siding and trim wood decay (typically the lower boards)
8. Interior mold issues
9. Termite infestation
10. Foundation movement/settlement (cracks in brick piers, chimneys, floor settlement)

The principal areas of a building that tends to decay the fastest are flat, horizontal surfaces such as windowsills, porch column bases, and wood elements that receive rainwater splash-back. Wood decay (exterior painted woodwork) most frequently occurs in replacement wood of lesser quality - most seen in fast-grown yellow pine or other species containing a high percentage of sapwood. However, wood decay in more durable old-growth species such as tight-grain heartwood is frequently observed. Sadly, an increasing amount of decay of original and older exterior woodwork on historic buildings has been observed over the past couple of decades.

Why is durable old-growth woodwork that has survived for one to two-hundred years, in many cases, decaying - and decaying in a short period of time? An example is a windowsill illustrated below (fig. 4), from a ca. 1800 house in Halifax, NC. According to the contractor the sill was in sound condition when the exterior of the house underwent repairs and repainting about a decade ago. Within four years after this work, extensive decay was observed in the windowsill.



Fig. 4. Two-hundred-year-old windowsill decay, Sally Billy House, Halifax

Wood rot most commonly occurs when moisture becomes trapped inside wood. The decay in this windowsill was likely caused by a non-breathable thick-mil latex paint that was applied to the exterior woodwork. Also, note the decay in the bottom rail of the window sash. The use of low and non-breathable coatings increases the potential for wood decay on exterior woodwork - especially in areas prone to decay. Exacerbating this problem is increasing rainfall, humidity, and severe weather events. Foundation moisture issues can also significantly increase the potential for premature wood decay and other issues such as termite activity, foundation settlement, and masonry deterioration.

Far too often, repairs to problematic areas of deteriorated exterior woodwork are made using the same materials and methods that have failed in the past. Repairs are often undertaken with the commonly held belief to “seal” exterior woodwork to keep the moisture out. The result is often premature failure of the new work - in many cases in as little as one to two years following the repair. Below is an excellent quote from English Heritage on the importance of “breathable” products.

“The fabric of a traditional building usually needs to ‘breathe’: to release and absorb moisture, for example from rising damp, driving rain, defects, and condensation. Moisture can move through traditional permeable building materials until it evaporates, internally and externally. Modern impermeable building products obstruct this process: instead of keeping moisture out, they can often trap it inside, accelerating decay processes.”

ENERGY CONSERVATION IN TRADITIONAL BUILDINGS
ENGLISH HERITAGE

Source: <http://www.carbonaction2050.com/sites/carbonaction2050.com/files/document-attachment/English%20Heritage%20Energy%20Conservation.pdf>

Prior to undertaking repairs, the cause of the issue(s) such as paint failure, mold, wood decay, foundation settlement, or other, should be investigated. Diagnosing the cause or causes of why something has failed on a building is highly recommended. By understanding the likely causes(s) of a problem, a more sustainable repair solution can be sought.

An example of a common issue is deterioration of porch column bases (bases and plinth blocks) - where the repair/replacement of the bases can be expensive and involve complicated structural work. Issues typically causing deterioration of column bases is rainwater falling off the roof splashing onto the bases, settlement of the masonry foundation below (causing the column base to settle into the porch floor - creating a “bowl” effect holding water against the base) and layers of non-breathable paints and caulk trapping moisture inside the wood.

By simply replacing the deteriorated column base without investigating the cause(s) likely would result in premature failure of the new work in a few short years. A holistic approach for a more sustainable repair to the column base might involve repairs to a foundation, removal of non-breathable paints and caulks, repainting with a breathable

paint and gutter work. If the roof has gutters, are they clogged or undersized? If there are no gutters, should gutters or rain diverters be considered? Solutions used to reduce the potential for the same issue to reoccur are often simple and reasonably in cost.

In recent years, “breathable” coatings and compatible materials for historic buildings has been developed or re-introduced to the market. Examples include traditional lime mortars, stone repair products, wood putty, linseed oil paints, mineral paints, lime paints, and pine tar preservatives to name a few. Many of these products/materials have proven their effectiveness through years of testing and trial and error use on historic properties - including several projects in this region. The use of compatible products/materials can extend the service life, such as on exterior woodwork and masonry, resulting in long-term cost savings while preserving older and historic fabric.

II. Condition

The Wood family deserves recognition for the care and attention that has gone into maintaining this historic property. It is clear from our site visit that considerable effort and expense has been invested into the building and grounds. Maintaining such a large frame house, numerous buildings on the property, along with acres of the surrounding historic landscape, has and continues to be a challenge.

While the house appears to be in good condition several areas of concern were noted and discussed below. Below are general observations, thoughts, and recommendations from our cursory inspection that will hopefully, aid in the planning process and repair work.

Priority: (Exterior/Interior)

1. Asbestos Inspection (*priority recommendation*)

Deteriorated pipe-wrap insulation was observed in the basement (fig. 5). If the insulation contains asbestos, it can pose a serious health risk to workers or anyone spending time in

the basement. The pipe insulation along with other sources of asbestos should be inspected and abated (removed or encapsulated) by a qualified professional. It is recommended that an asbestos inspection and necessary abatement be conducted prior to other work in the basement.



Fig. 5. Deteriorated pipe insulation in basement.

2. Electrical (*priority recommendation*)

Several **safety** and potential **fire** concerns were observed with the electrical system. In our cursory walk-through we observed open electrical junction boxes (fig. 7) in several locations, uncovered panel boxes in the basement, (fig. 6), questionable splices, deteriorated condition of some wiring, and other issues.

An experienced and qualified electrical engineer/electrician should be hired to thoroughly inspect the electrical system. It is likely that portions of the electrical system will need to be disconnected for potential safety/fire concerns. Temporary repairs and re-routing of

some of the wiring, panel boxes, or other components may also be necessary until repairs and replacement of deteriorated and aged electrical system can be accomplished.

Temporary measures might also include upgrading panel boxes with arc fault breakers. An electrical contractor may also be able to install easy to access switches (in an accessible location) that shuts-off all non-essential power to areas of the building that are not in continuous use. For example, power could remain on 24/7 to HVAC units, security lighting, security systems, refrigerator, and any other necessary areas while shut-off to the rest of the house. When power is needed for cleaning or other uses, main power switches could be turned-on for temporary use and switched-off when finished. At Hope Plantation in Bertie County, a single switch was installed by the electrician inside the basement door. Museum staff and volunteers use this door to enter the house. When the switch is turned-on lights and outlets needed for tours and other functions inside the house are powered up. The switch gets turned off when the building is unoccupied. This measure was taken due to the aged electrical wiring in the house.



Fig.

6. Uncovered electrical panel boxes in the south wall of the basement. Note damaged water pipe insulation above the panel boxes.

Upgrades and/or full replacement of electrical systems should be part of a comprehensive study/plan for the house. Planned and future use of the house will likely require additional electrical services to meet various needs.

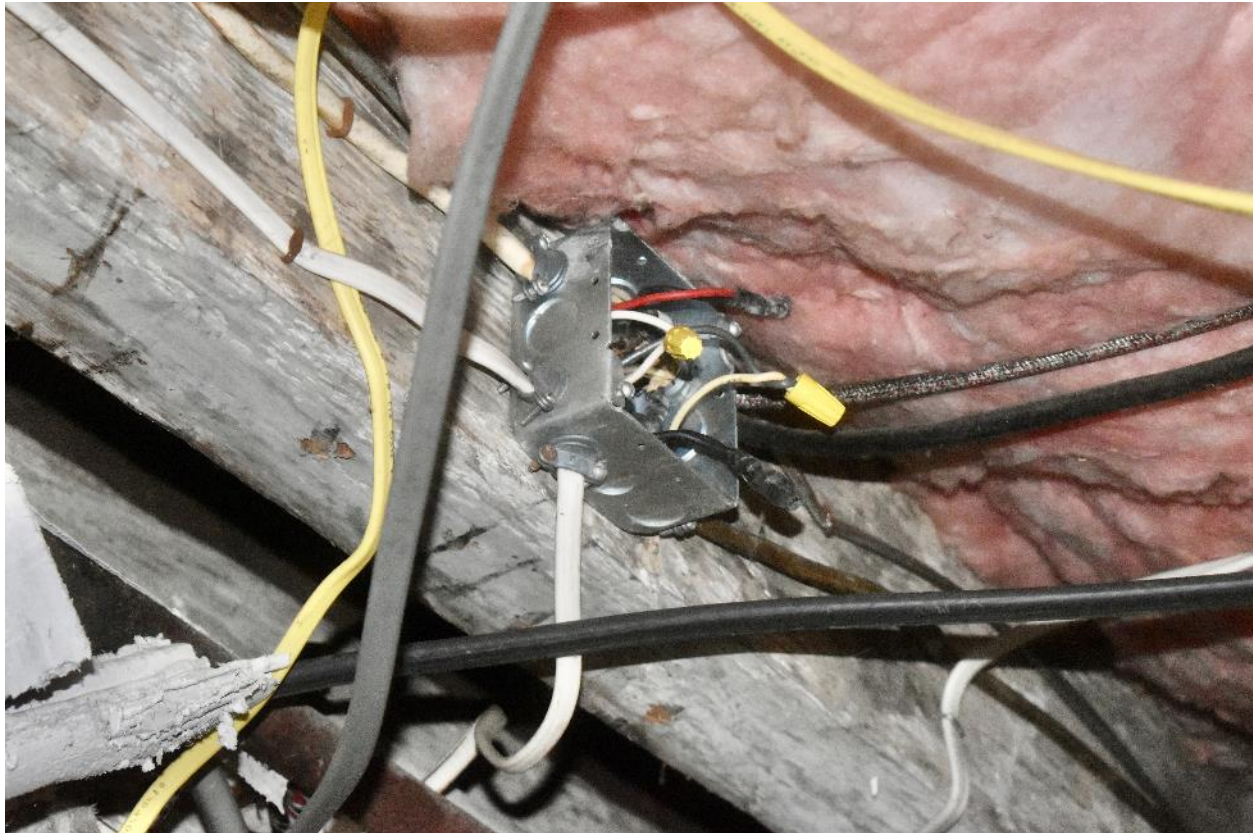


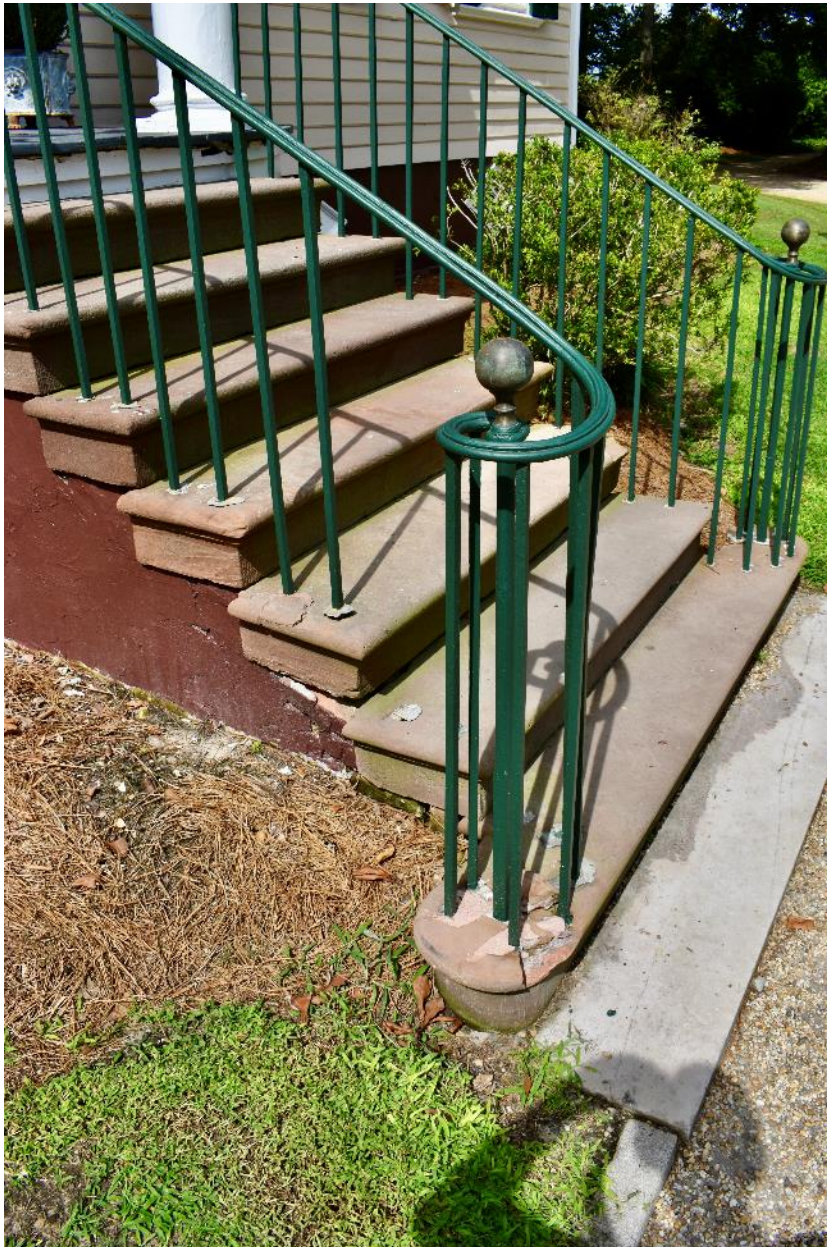
Fig. 7. Uncovered junction box in basement. Note exposed wire (at top) close to fiberglass insulation.

3. Glass Fire Safety Devices (*priority recommendation*)

Different types of vintage glass fire safety devices are located throughout the house - including the attic and basement (fig. 8). Vintage fire safety devices often contain dangerous chemicals and can pose a health safety risk. Caution should be made to avoid contact with these devices. An environmental professional or fire marshal should be contacted for proper disposal. Linked below are two articles on vintage fire safety devices.

<https://saskmuseums.org/blog/entry/glass-grenade-style-fire-extinguisher-bombs-are-they->





4. Exterior Entrance Steps and Railings (*priority recommendation*)

Entrance steps on both north and south elevations pose a safety risk. A few of the stones have become dislodged from the masonry base (fig. 11). On the north elevation (fig. 9) a couple of the original wrought-iron rails have been removed. Susan Wood mentioned that she has the iron balusters that were removed.

Fig. 9 North elevation entrance steps and railings.

A wood railing on the south elevation, west side, is loose and poses a safety risk (fig. 10). This original or old handrail should be secured by an experienced restoration carpenter/contractor.



Fig. 10. Loose wooden handrail - south elevation, west side.

Fig. 11 - below. North Entrance steps - dislodged and spalling stone steps.



Repairs, stabilization, and conservation work to the original stone steps and ironwork (figs. 9, 11, &12) should be carried out by an experienced restoration stonemason and metal

specialist. For safety reasons and to protect the steps and ironwork from further damage until repairs can be made, temporary measures should be considered to provide safe access to the house. Especially concerning is moving furniture and heavy objects, equipment, on the fragile and loose stone steps.



Fig. 12. Damage to original wrought iron porch railing

5. Interior Plaster (*priority recommendation*)

Loose and detached areas of plaster were observed in the cupola and kitchen (fig. 13) – and poses a safety risk. Loose areas of ceiling plaster (throughout the house) should be repaired or temporarily secured.

One method to secure loose plaster is to install plaster washers. Plaster washers are inexpensive and easily installed. Perforated plaster washers can be installed in a temporary manor to secure plaster or permanently fixed and plastered over. There are several sources of plaster washers that can be found in a web search – such as this sample source: <https://www.charlesstsupply.com/plaster-washers>

Helpful Resource: NPS Preservation Brief: *Repairing Historic Flat Plaster Walls and Ceilings*
<https://www.nps.gov/tps/how-to-preserve/briefs/21-flat-plaster.htm>

Historic Environment Scotland, Technical Advice Notes 2, *Conservation of Plasterwork*

<https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=40291e0a-dfd7-42d1-ba04-a5c201076eff>



Fig. 13. Damaged and falling area of plaster in the original kitchen

6. HVAC Unit - Attic (*priority recommendation*)

The condensation overflow pan for the attic unit is damaged and corroded in areas. The owner mentioned that the condensation overflow from the attic unit damaged the ceiling above the staircase in recent years. The pan should be inspected and repaired/replaced by an experienced and qualified HVAC technician. Both units should also be checked for



Fig. 14. Attic HVAC unit. system.

condition and serviced. Each unit has an electronic air filtration. The electronic filters along with the HVAC system filters should be inspected and cleaned/replaced per the manufacturer's recommendation.

Exterior



Fig. 15. Deteriorated column base – south porch

7. Porches (priority recommendation)

The porch structure, flooring, masonry foundation (figs. 16 & 17), and columns – especially the decayed wood column base and plinth block on the south porch (fig. 15), should be evaluated by an experienced restoration contractor, qualified structural engineer, or preservation architect. The specialist should identify structural repair needs along with recommendations for any serious structural concerns that should be addressed as soon as possible. Additional any non-structural repairs can be accomplished at a later phase.



Fig. 16. South porch floor decay. Deterioration was also noted in areas of the outer porch framing member.

It appears that thick layers of non-breathable paints may be trapping moisture inside the wood - causing this decay. Fiberglass mesh was used to repair/patch the west end column (lower section) and base. This coating may not be breathable and trapping moisture in the wood column. To reduce the potential for decay in the lower sections of the column, bases and plinths, consideration should be given to removing layers of non-breathable paint, applying a wood preservative, followed by a breathable paint system (see attached articles, *Benefits of Using Wood Preservatives* and *Why Paints Fail: Common Paint Problems and Repainting Older Buildings*).

Helpful Resource:

Preservation Brief: *Preserving Historic Wooden Porches*
www.nps.gov/tps/how-to-preserve/briefs/45-wooden-porches.htm

NPS
<https://>



Fig. 17. South Porch – note deteriorated column plinth block and mortar loss.

8. Tree Limbs and Vegetation

Tree limbs and vegetation growing against the roof and house should be pruned during or prior to work on the roof. An experienced tree specialist/arborist should be consulted for recommendations regarding appropriate pruning or possible tree or limb removal that may pose a risk to the house.



Fig. 18. Overhanging tree limbs – northwest side of library wing

9. Roofing and Gutters

Susan Wood pointed out an active leak above the second-floor north elevation window (fig. 19). She mentioned having this recently looked at by their roofer who was unable to find a source of the leak. Although we were not able to inspect the slate roof, it is possible that this leak may be a gutter-related issue.

The main portion of the house has built-in gutters (fig. 20). We were unable to determine from the ground if the built-in gutters are operational or covered over and not in use. Downspouts for the built-in gutters system appear to be undersized and may cause the gutters to back-up with water during a heavy rain event.



Fig. 19 Ceiling stain from active leak – second floor hallway – north end.

Clogged downspouts were also observed (fig. 21) in addition to debris in the half-round gutters on the hyphens and wings (fig. 22). A roofing contractor who has extensive experience working with historic slate roofs is recommended to inspect and make necessary repairs. The gutter system on the main house, hyphens and wings should also be inspected and repaired by an experienced roofing contractor or gutter specialist. The modern-style “K”-style gutter rectangular downspouts should in the future be replaced with half-round downspouts.



Fig. 20. North Elevation - note location of built-in gutter where the slate stops at the eave



Fig. 21. Clogged downspout – note split in downspout.

Helpful Resource:

NPS Preservation Brief: *Roofing for Historic Buildings*

<https://www.nps.gov/tps/how-to-preserve/briefs/4-roofing.htm>

Preservation Brief: The Repair, Replacement and Maintenance of Historic Slate Roofs

<https://www.nps.gov/tps/how-to-preserve/briefs/29-slate-roofs.htm>



Fig. 22. West (north elevation) hyphen – note damaged and clogged gutter..

Masonry - Chimneys and Foundation Work

While the roof is being inspected ask the roofer to take photographs of the chimney stacks (fig. 20). The photographs can be helpful in determining if an experienced brick mason needs to be consulted, at this time, for repairs or stabilization work to the chimneys.

An experienced restoration mason should be hired to repoint areas of missing and deteriorated mortar on the historic chimneys and foundation - as well as other needed repairs to the brickwork. A mason should first do a sample repointing area prior to performing repair work. The color, texture, strength, and tooling of intact original mortar joints should be matched with the new work.

Helpful Resource:

NPS Preservation Brief: *Repairing Mortar Joints in Masonry Buildings*

<https://www.nps.gov/tps/how-to-preserve/briefs/2-repoint-mortar-joints.htm>

11. Foundation and Drainage

Uncontrolled moisture is the most prevalent cause of deterioration in older buildings. High levels of foundation moisture increase the potential for termite activity, wood decay, paint and finish failure, mold and mildew problems, uncomfortable environmental conditions inside a building and more. Uncontrolled roof rainwater runoff is a leading and often overlooked cause of indoor humidity problems in buildings. At Hayes, we observed high levels of indoor humidity in the basement, hyphens, and library wing. The amount of rainwater falling off a roof during a rain event can be substantial. One inch of rain on 1,000



Fig. 23. Foundation erosion on the north elevation, west side

August, 2022



Fig. 24 South Elevation.

square feet of roofing produces 600 gallons of water. If one side of the main roof at Hayes has 2,000 square feet, for example, and if there is an inch of rainfall that would equal 1,200 gallons of water. Eight inches of rainfall during a hurricane would produce 9,600 gallons of water on the same 2,000 square of roofing. That would equate to the size of a small swimming pool of water emptied on one side of the house.

Where does this water go? Ideally, most of the rainwater would be captured in the gutter system and carried away from the foundation through the in-ground drainage system. If the gutters are clogged, undersized for the size of the roofing, covered over (on the main house), or the downspouts and in-ground system non-functioning, all or most of the rainwater would fall to the ground. With poor site drainage and ponding around a foundation, as observed at Hayes (figs. 23 & 25), rainwater can wick-up into older masonry walls and seep under the building into the basement or crawlspace.

There is evidence of minor flooding in the basement - and portions of the floor were wet during our inspection (fig. 27). One and possibly the main source of the minor flooding is roof rainwater runoff. Rainwater runoff from the high roof on the main house - especially on the south elevation (fig. 24), appears to be draining towards and ponding under the



Fig. 25. Erosion at foundation of south porch.

porch (fig. 25). The soil is eroded under the porch and has ripples from ponding that drains towards the foundation. The falling and ponding water also appears to be the cause of foundation mortar and brick deterioration observed in several areas of the foundation.

Controlling the rainwater runoff from the roof of the main house, hyphens, and wings is recommended. While gutters and the in-ground drainage system will require periodic maintenance and repairs, the benefits can outweigh the effort and cost. Controlling the rainwater runoff from the roof should resolve and mitigate many of the issues noted above.

Increasing ventilation in the crawlspace and basement is also recommended. Good cross ventilation will aid in keeping these spaces dryer. Many of the foundation vents and window openings in the basement were covered or blocked. On the north elevation of the hyphens, brick wells were constructed around the foundation vents. These wells have been covered with metal roofs - blocking airflow to the vents (fig. 26). The metal roofs may have been installed to keep the wells from filling up with water - water likely overflowing from clogged or undersized gutters above. (fig. 22).



Fig. 26. Covered foundation vent - north elevation of hyphen



Fig. 27. Basement - note damp floor and damage to ductwork from high humidity levels

Helpful Resource: NPS Preservation Brief: Holding the Line: *Controlling Unwanted Moisture in Historic Buildings*

<https://www.nps.gov/tps/how-to-preserve/briefs/39-control-unwanted-moisture.htm>

12. Wood Destroying Insects (Termites and Powder Post Beetles)

Subterranean termite damage was noticed inside one of the built-in bookcases in the library (fig. 28) – to the left of the main entry door.



Fig.28, Termite damage inside a built-in bookcase in the library.

Power post beetle (furniture beetle) activity was noticed in a few of the attic framing members as well as some of the furniture and wood objects in the attic.

A termite and powder post beetle inspection should be conducted by an experienced and professional pest control company.

13. Shutters

The majority of the exterior blinds appear to be in good condition from our cursory observation from the ground. The blinds were also recently



Fig. 29. North elevation, west wing - note sagging blinds.

painted. The blinds and hardware (hinges and hooks) should be checked for structural integrity - or missing components. High wind events such as a hurricane can cause significant damage to shutters that are not properly secured to a building.

14. Library

The architecturally and historically significant Gothic library with the paint decorated ceiling (fig. 30) appears to be in stable condition. However, the library felt humid during our visit. We strongly recommend consulting with an architectural conservator who has extensive experience with paint decorated plaster and historic finishes. We do not

recommend conditioning this space to reduce humidity and for temperature control - unless under the guidance of a professional conservator. Introducing heating and air-condition in this space could result in paint loss or cracking of finishes, plaster, and original woodwork.



Fig. 30. Original paint decorated library ceiling

A qualified conservator should be hired to assess the condition of the historic finishes, plaster, paint decoration, and other features of the room and to offer guidance for any needed conservation work, environmental control, and cleaning.

1. Carriage House Barn (*priority recommendation*)

We are very concerned over the potential collapse of portions of the roof faming system onto the rare-surviving traveling carriages, farm wagons, and other historic artifacts that

are stored inside the carriage barn (fig.31). We fear that portions of the building are especially vulnerable to failure/collapse during a windstorm.



Fig. 31. East Elevation Carriage House/Barn

The roof has been leaking long enough in the area adjacent to the carriages to cause extensive decay to structural framing members. We recommend that the historic artifacts including the traveling carriages (fig. 32), farm wagons be moved to a secure storage location until the carriage house can be repaired. A restoration contractor/carpenter who has extensive experience with timber-frame buildings, of similar age, should be hired to perform repairs and/or stabilization work to secure this early nineteenth century building.

Listed in the Inventory for the “*Manor Farm-Hayes [ca. 1866]*” “*Riding & Pleasure Vehicles*” are two traveling carriages. The large carriage may be the one noted as “old” during the 1866 inventory (fig. 33)>

1 Traveling Carriage, small

1 Traveling Carriage, large & old (likely the one illustrated in Figs 32 & 33)

August, 2022

Source: Zehmer, John G. Jr., Hayes: *The Plantation. Its People, and Their Papers*, Office of Archives and History, NC Department of Cultural Resources, Raleigh in association with the North Caroliniana Society, Chapel Hill, 2007, pg. 206.



Fig. 32. Traveling Carriage

August, 2022



Fig. 33. Traveling Carriage

Additional Resources

National Park Service, U. S. Department of the Interior

<http://www.nps.gov/tps/about.htm>

The Secretary of Interior's Standards for Rehabilitation

These ten national standards outline a hierarchy of preservation practices that focus on the maintenance and protection of historic properties, valuing preservation over the replacement of historic features. The standards also address landscape features, site, and setting as well as additions and new construction. The ten Standards along with additional information and guidance is available on the National Park Service website: <http://www.cr.nps.gov/hps/tps/tax/rehabstandards.htm>.

Technical Preservation Services 1849 C Street, NW
Mail Stop 7243
Washington DC 20240 202-513-7270

The Technical Preservation Services branch of the National Park Service administers the federal Rehabilitation Tax Credit programs and has published downloadable Preservation Briefs on 50 topics, which provide guidance on preserving, rehabilitating, and restoring historic buildings. These briefs provide technical advice and recommended methods and approaches to sensitively rehabilitating historic buildings. A list of these briefs with links has been provided in this appendix.

<https://www.nps.gov/tps/how-to-preserve/by-topic.htm>

National Park Service's Technical Preservation Briefs:

www.nps.gov/tps/how-to-preserve/briefs.htm

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Please let me know if you have questions and I look forward to providing as much on-going technical restoration advice as I can with repairs and maintenance. Upon request I will also be glad to provide names and contacts of experienced restoration trades people and other specialists from our consultants list.

Report prepared by:

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