

**LAWRENCE  
GROUP**



Building Assessment Study for

**Martin Franklin Hanley House**  
City of Clayton



Prepared for

**The City of Clayton**  
Parks and Recreation Department

and

**The Hanley House Council**



November 14, 2007



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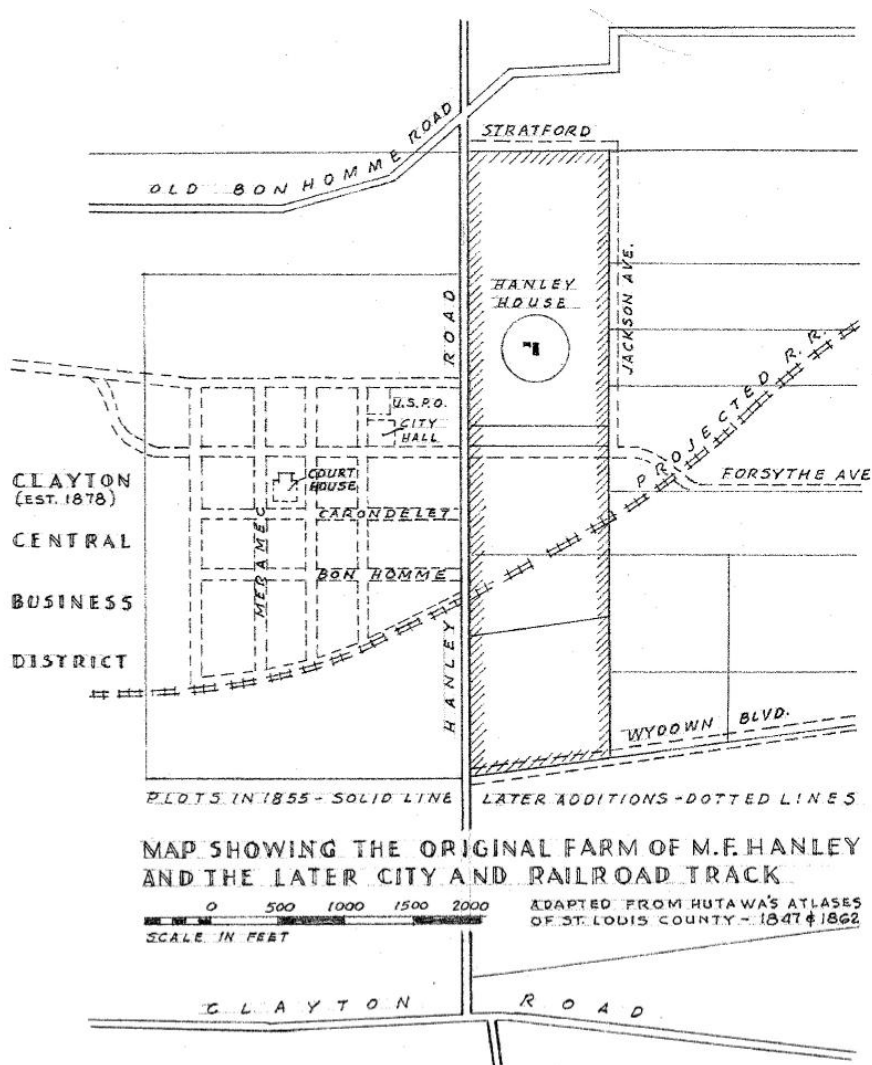
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Introduction

The wagon path worn by Martin Hanley between his blacksmith's shop and market on Olive Street Road and present-day Westmoreland Avenue in Clayton now bears the name Hanley Road. But when Martin Franklin Hanley began to excavate a foundation and prepare what was the southern of his two assemblages of land for a new home, he merely sought to create refuge for himself and his family.

Credit: Frank R. Leslie, AIA - HABS Record Drawing furnished by City of Clayton Department of Parks and Recreation





Occupying open high-ground and surrounded by what has become the financial, municipal and corporate epicenter of St. Louis County, Missouri, Hanley House served as an agricultural counterbalance for Martin Hanley’s entrepreneurial operations that stretched northward to present-day Olive Street Road (known in the mid-19th century as Central Plank Road).



The main house and its outbuilding were constructed predominantly in the Greek Revival style, which was immensely popular in the mid- to late-1800’s. As the final years of the 18th century had brought a heightened interest in classical buildings to both the United States and Europe, the first building vogue was the Federal style and was based on Roman models. Archaeological investigation in the early 19th century, though, emphasized Greece as the source and precedent of Rome which, in turn, shifted interest to Grecian models.

The Greek Revival style, therefore, is an adaptation of the classic Greek temple front, and at the Hanley House is evident in features such as the main entry portico (porch) and columns, the gabled facade and roof line, wide cornice trim at the eave of the roof, transom and sidelites at the main front entries, and large window openings.

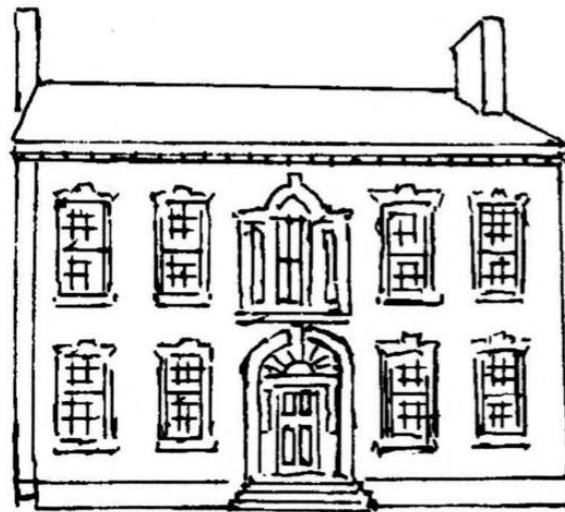


Figure: The Federal Style

Credit: Webster Groves Historical Society and the City of Webster Groves, Missouri



One curiosity is that most Greek Revival houses are believed to have been painted white because it was not then known that the white marble of ancient Greece buildings had often been polychromed. Yet the Hanley House is understood to have been painted at one time, possibly as its original finish on the clay masonry.

The Hanley House was clearly built to stand the test of time, as its solid multi-wythe masonry exterior walls, stone foundation, and wood-framed roof and interior partitions are still serviceable after 150-plus years.

Credit: Webster Groves Historical Society and the City of Webster Groves, Missouri



Figure: The Greek Revival Style

This historic home's passage into modern times was not without its moments of uncertainty, though. In 1969, the City of Clayton managed to purchase the home from the great-nieces of Martin and Cyrene Hanley - three generations of Hanley family members had owned and occupied the premises continuously until possession was taken by the City, but the home had become run-down. An archaeological dig, and a scope of work to historically and authentically repair the home were immediately undertaken, with construction progressing into the early 1970's.

The results of the refurbishment work nearly forty years ago were to preserve the Hanley House in original form until today. The house and site have been in operation as an educational and archival venue for many years.

With the right combination of careful planning, committed, targeted construction, and regular maintenance and upkeep, the Hanley House and its historic site are sure to last many years into the future, and provide the City of Clayton and all visitors to the home a unique glimpse into the life, times and social history of pre-Civil War Missouri.

## Executive Summary

In spring of 2007, the City of Clayton Parks and Recreation Department commissioned Lawrence Group Architects of Saint Louis (LGA) to investigate and provide a detailed building assessment study of the Martin Franklin Hanley House, a historic home with contemporaneous Summer Kitchen outbuilding. The facility is presently operated as a museum, and is situated at 7600 Westmoreland Avenue in Clayton, Missouri.

This study sought primarily to investigate the existing condition of the Hanley House site through documentation of all building architectural elements, structural systems, and mechanical and electrical systems. The targeted result of said investigation was to make recommendations as to means of stabilizing, preserving, and / or refurbishing the existing Hanley House and its outbuilding.

This study was also tasked with identifying order-of-magnitude construction values (estimated cost) for recommended building improvements.

Through several visits to the Hanley House, a hands-on assessment of existing conditions was conducted by LGA and the study team. This assessment took into careful account all information gathered through discussion with the Owner's site staff, documents provided by the Owner, and thorough consideration by the architect and several focused consultants of both apparent and concealed aspects of the existing facility.

As initially posed by the Owner, this study has sought to answer how the 150-plus year-old Hanley House might best be utilized now and into the future. Indeed, the house's very nature as an artifact and museum is a question at the core of this report, as is the unique but isolated site on which it sits.

In limited fashion, this study also considered the potential addition of an Interpretive Center to the site. The report which follows reflects discussion of the perceived impacts and synergies construction of such a new program and facility might create.

It should be noted that no stylistic analyses or critique of the Hanley House have been made per se. In offering all recommended scopes of work, though, a goal of this report has been to respect historical accuracy and to allow for architectural authenticity as renovation and refurbishment work may occur in the future. Likewise, this report seeks to not limit the Owner's ability to comply with U.S. Department of Interior guidelines for historic preservation, renovation, and reconstruction.

Further, this study has explicitly excluded analysis of all replica and contemporary site improvements, such as the well, privy, flagstone walk-way, and picket fence with gate. Although similarly excluded from the study's scope, some ancillary consideration has been given to interior finish materials, and certain furnishings, fixtures and equipment.

Lastly, the possibility of relocating and / or demolishing the Hanley House and Summer Kitchen were each preliminarily discussed. However, each option was pre-emptively dismissed as a consideration which was inconsistent with the intent to refurbish and preserve the house and its original site as an historic artifact. It is the understanding of this report that such significant and altering scopes of work have previously been discussed by the Owner, and are not germane to the study represented herewith.

The investigation of the Hanley House and resultant report document are intended as a vehicle for discussion which might better ensure preservation and refurbishment of this historic structure. This report is subject to change as the building's program, administration, or facility needs evolve and develop over time.

### Architectural / Structural / Mechanical / Electrical Assessment

As a product of intensive field investigation performed by LGA and its consultant team, a list of building threats, deficiencies and liabilities was compiled. This list was checked against observed "wear-and-tear" of the main house and its outbuilding. This list was also developed in the context of conformance with applicable codes, and consideration of the site and program of operation. From there, the list was evolved into the overall assessment report which follows.

Investigation of the Hanley House consisted of the following discrete components:

1. Architectural systems analysis (*building exterior and building interior, and general review of sustainability and LEED issues with respect to preservation and maintenance*)
2. Site and ancillary scopes analysis (*preliminary only*)
3. Structural systems analysis (*based on visual observation of the building exterior and building interior, and as documented during the architectural analysis*)
4. Mechanical / Plumbing / Electrical / Fire Protection systems analysis
5. Building and Life Safety Code analysis (*preliminary only*)

 Issues Contributing to Building “Wear-and-Tear”

Initially, a review was conducted of the Hanley House site and structures thereupon in order to quantify aspects of building deterioration.

Given the age of the main house and its outbuilding, the manner and materials of construction, and the location and orientation of the site as an improved, suburban (close to city center) plot in central eastern Missouri, the following “wear-and-tear” items were encountered as typical and anticipated. The most significant issues observed were:


1. Regular weather-related degradation, including rain, hail, surface ice and wind impacts.
2. Age vs. standard longevity of building materials and systems, such as clay masonry employed in a multi-wythe bearing wall capacity, stone masonry employed in a foundation design, joint sealants, sheet metal flashings, composite cement roof tiles on wood decking roof construction, and exposed painted wood trim and framing.
3. Site issues such as unforeseen soils settlement, under-ground water sources (naturally occurring and man-made, as in the case of lawn sprinklers), adjacency to landscape elements, and unverified soil bearing capacity at the limits of the existing foundation.
4. Modernization of and renovations to infrastructure adjacent to the building footprint, including the addition and manipulation of under-ground utilities such as water, gas, electric and sewer lines.

 Threats to Building Components and Systems

Next, the Hanley House and Summer Kitchen were examined in order to ascertain and label shortcomings and compromises of the existing construction. The succeeding list of impending threats to the main house and outbuilding primarily consists of issues which could be avoided, diminished, and / or eliminated through regular maintenance.

The most significant threats were perceived as:

1. Storm water infiltration of exterior envelope and resultant freeze-thaw damage.
2. Unchecked deterioration of exterior envelope (roof, walls, windows and doors).
3. Unchecked deterioration of gutter and downspout system, including storm water boots.
4. On-going settlement of soils at isolated areas (noted at SW and NE corners).

 Deficiencies and Liabilities of Building Components and Systems

Concurrent with the review of threats to existing, the Hanley House site and improvements were analyzed within the context of applicable codes and sound building practice. Several existing deficiencies and liabilities were documented; it should be noted, though, that these items were predominantly not considerations during the erection of the home, such as electrical and HVAC code compliance, and hazardous material abatement and replacement.

Nonetheless, these items would be recommended for remedy in a prioritized manner as work may be undertaken to improve the Hanley House and Summer Kitchen in the future.

Similar to previous, the succeeding list of issues could serve as outline for a program of restoration and renovation to the house and its outbuilding. Chief deficiencies and liabilities encountered at the Hanley House and Summer Kitchen included inadequate, failed and / or no:

1. Structural lintels in bearing masonry exterior walls.
2. Seismic reinforcing and / or provision for movement of structure due to earthquake activity.
3. Ventilation of roof construction.
4. Main disconnect and code-compliant conductors at electrical service.
5. Serviceable, resource-efficient condenser design (for air conditioning system).
6. Capacity for fresh air intake and segregated discharge of exhaust air.
7. Fire suppression, fire alarm and egress / emergency lighting system.

\* *While not explicitly listed or examined as a building liability, the presence of apparent and extensive hazardous (asbestos and lead containing) materials is a consideration that will likely inform any and all future scopes of work to renovate the Hanley House.*

 Governing Codes

Finally, the Hanley House site and improvements were analyzed with respect to codes and considerations which might be enforced as work would be undertaken to renovate, restore, and / or refurbish the existing construction.

The main house and its outbuilding are located within the jurisdictional boundaries of the City of Clayton, the County of St. Louis, and the City of Clayton Fire Department. Because the City of Clayton contracts with the County of St. Louis for some plan / permit review work, the following delineates specific aspects of work and the applicable municipality / code:

City of Clayton Department of Public Works:

- 2003 International Building Code (IBC)
- \* *2003 International Existing Building Code (IEBC)*
- 2003 International Plumbing Code (IPC)
- 2003 International Mechanical Code (IMC)

\* *It is not entirely clear whether the City of Clayton has adopted the IEBC.*

County of St. Louis Department of Public Works:

- 2005 National Electric Code (NEC) - *by separate submittal and permit*

City of Clayton Fire Department:

- 2003 International Building Code (IBC) - *by separate submittal and permit*
- \* *2006 National Fire Protection Association (NFPA) Life Safety 101 and Others*

\* *It remains to be confirmed that the Clayton Fire Dept. has adopted the 2006 edition.*

City of Clayton Architectural Review Board

Federal and State Historic Preservation Offices / US Department of Interior

It is assumed that the City of Clayton - and all other bodies with the power to apply and enforce code mandates to this project site - may adopt the 2006 or later International Building Code and family of codes in the future. For the purposes of this assessment and report, however, it has been assumed that the 2003 IBC and family of codes would be used to guide any and all designs for renovation and reconstruction.

The impact of the International Existing Building Code (IEBC) as may be applicable to scopes of renovation and refurbishment work to the Hanley House is significant. The IEBC - as a subset of the International Building Code (IBC) - would allow meaningful allowances to be made in the favor of the Hanley House. Most importantly, the IEBC would allow the Hanley House to be recognized as a historic structure (in the eyes of code officials), and would allow for the home to be repaired and refurbished to match, restore or replicate original materials.

This report should note, though, that certain aspects of the code would still dictate much of any renovation effort, such as egress from the structure, and the potential requirement for a new, automatic fire suppression system.

### Governing Codes *cont'd*

The following represents a preliminary outline of code information as is believed to apply to the Hanley House and site per the 2003 International Building Code and family of codes:

#### Use Group and Occupancy Classification: 'B' Business

Whereas the existing use group is most likely classified as an 'R-3' Residential, renovations would likely require a change in classification to the 'A-3' Assembly use group.

Per IBC 303.1.1, a non-accessory assembly occupancy (such as a small museum) for less than 50 persons may be considered as a 'B' Business use group

#### Change of Occupancy Classification:

Per IEBC Chap. 8, a change from 'R-3' Residential to 'B' Business is allowable as a change to equal or lesser hazard classification.

#### Construction Type: Type V-B

Per IBC 602.5 and Table 503, a building of the Hanley House's construction containing a 'B' Business use may be 40' or two stories above grade with a maximum of 9,000 square feet per floor (not including foundation / basement / ground levels).

#### Fire-Resistance Ratings and Separation Distance:

\* Per Table 601, a Type V-B structure requires zero fire resistance ratings for building elements including structural frame, bearing walls, non-bearing walls, and floor and roof construction. However, code minimums with respect to required fire resistance of the structure should not be implied to suggest that the Hanley House be unprotected.

Per Table 602, a 'B' use group in a Type V-B structure requires a minimum of ten feet separation between it and another structure to allow a zero hour rating of fire resistance on exterior non-bearing walls and partitions.

#### Designation as a Historic Building:

Per IEBC Chap. 10, renovations to the Hanley House would be permitted by code officials as repairs to an historic structure rather than modern renovations. This designation provides for the preservation of historic buildings, and would thereby allow for matching of original materials and methods of construction.

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#### Fire Classification: Class C Roof Assembly

Per IBC Table 1505.1 and IEBC 1005.5, a Class C roof assembly would be required for the Hanley House. A fire-retardant-treated wood shake roof system with correct underlayment would satisfy the Class C assembly designation.

Per IBC 1507.9 and Table 1507.8, a replacement fire-retardant-treated wood shake roof system would be permissible for installation at the Hanley House.



 Hanley House Building Stabilization Recommendations

In light of the examination and analysis conducted at the Hanley House site, the following items represent a summary of recommended work scopes that have been conceived as a means to protect, refurbish, restore, and / or upgrade the existing structure(s).

Each heading and individual aspect of construction identified below has been reviewed in the context of potential relative impact on the integrity of the exterior envelope, the priority with which such work would be recommended for execution, and economies of scale which might be present if conducted in conjunction with other scopes of work. Also considered were the types and conditions of existing historic materials and methods of assembly, items which might dictate replacement or renovation work to be performed. Pro-rated rough order-of-magnitude (R-O-M) cost for each portion of overall recommended work is included with each heading.


The most urgent issues to be addressed were identified as:

- 1. Roof system, flashing system, and gutter and downspout system - \$ 167,937.27  
*assumes heavy cedar shake design, and includes bolstering of roof framing*
- 2. Mechanical (HVAC) systems - *includes interior supply air renovations but excludes all plumbing infrastructure renovations* \$ 140,289.62
- 3. Exterior windows and doors - *includes frames, sills and casings / trim at all above-grade wood windows and doors but excludes sub-grade door - assumes conservation / refurbishment* \$ 303,382.58
- 4. Exterior clay brick masonry - *excludes stone masonry foundation* \$ 137,914.53
- 5. Existing electrical distribution panel and circuitry \$ 51,153.62
- 6. Existing fire alarm system - *assumes electrical upgrades and renovations* \$ 16,448.82
- 7. Lack of an automatic fire suppression system \$ 190,630.05

A second tier of pressing issues to be addressed were identified as:

- 8. Exterior and interior stone masonry foundation system - *includes stabilization piling and tuckpointing only* \$ 37,964.46
- 9. Drainage and evacuation at stone masonry foundation perimeter - *excavation, rock, drain system, and landscaping, etc.* \$ 24,526.36
- 10. Exterior wood decks, railings and trim - *assumes replacement* \$ 85,642.53
- 11. Exterior wood shutters - *assumes conservation / refurbishment* \$ 28,594.51

Refer to report sections 3 and 4 for documentation and assessment of existing conditions, and also to section 7 appendices 1 and 2 for "Assessment Summary" and "Architectural Report".

 Rough Order-of-Magnitude Cost Estimate

Based on site investigation, documentation and analysis of existing conditions, discussion with construction professionals and practitioners, and consideration of current labor and material rates, an overall cost estimate for recommended renovations to the Hanley House was assembled.

The overall cost estimate began with estimated "hard cost" numbers for execution of prioritized infrastructure improvements; said improvements would be intended to refurbish, preserve and / or maintain the main house and its outbuilding. To this foundation of rough order-of-magnitude construction numbers was added an estimate of ancillary contractor cost, and then a construction contingency (at 7%) was applied. An allowance for hazardous material abatement has heretofore been excluded.

As with any construction endeavor, "soft cost" numbers would be an additional component of project financing. Items such as contractor overhead and profit, permitting, bonds and insurance, professional design consultation fees, and site observation and testing have thereby been added to the overall cost estimate for the Hanley House.

It should be further noted that dollars spent on investigation of the Hanley House - information and analysis which provided basis for assembly of this report - are incorporated into the overall R-O-M cost estimate grand total.

Although possible to be packaged, bid, and built separately, this project has been conceived of as a single scope of work. Thus, the following report has been founded on the basis that the work be designed and issued as a consolidated package of documents, and that it be overseen and executed by a single general contractor, who would report directly to the Owner.

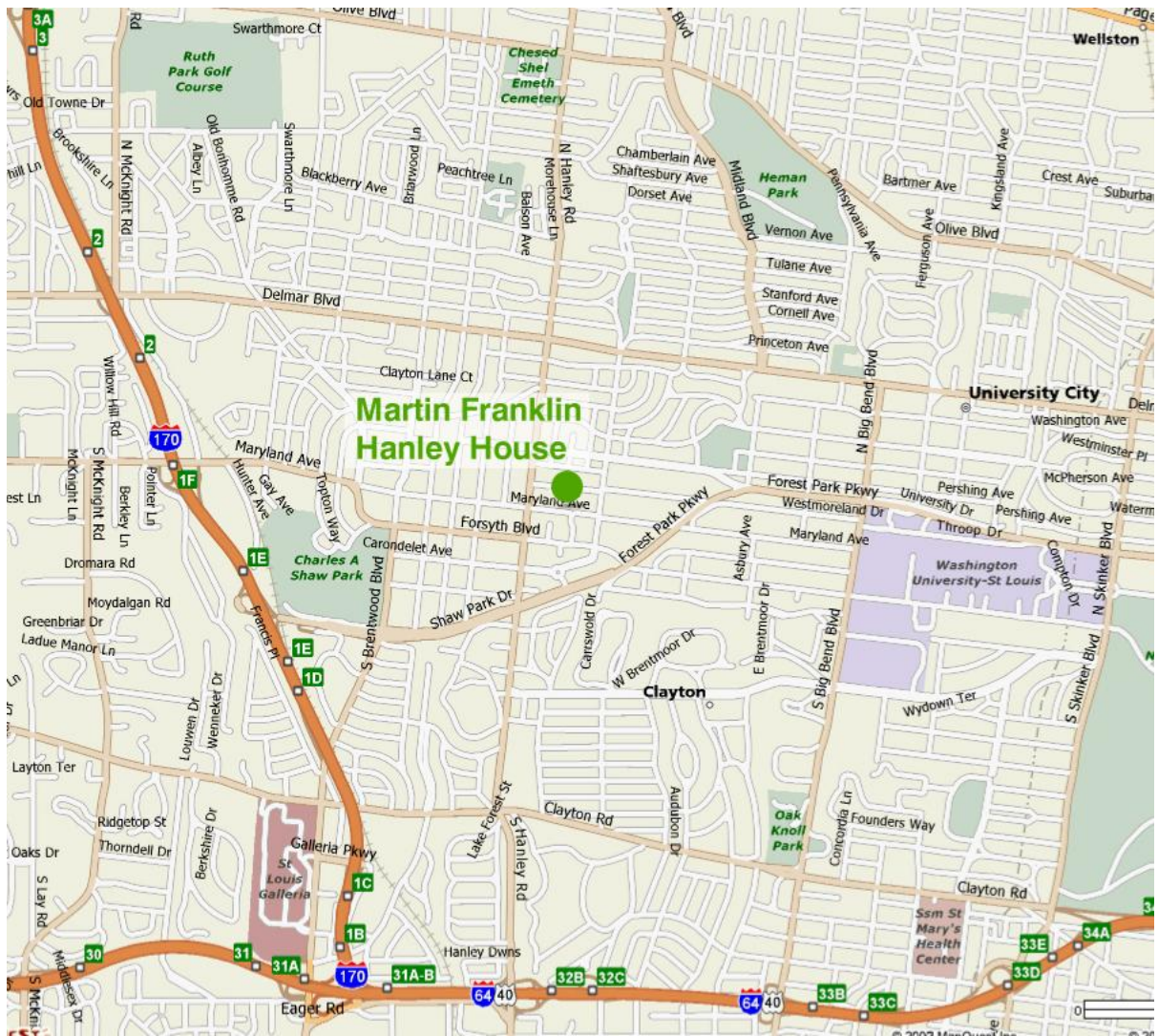
The grand total R-O-M cost estimate is \$1,310,150.82. *[It should be noted that recommended scopes of work headings and pro-rated R-O-M costs identified previously in this section do not constitute the entirety of the R-O-M cost estimate.]*

Lastly, it should be noted that the R-O-M cost estimate is considered valid for a construction start date through spring of 2008. This would require that the Owner solicit bids from interested general contractors in the last quarter of 2007 / first quarter of 2008. This report assumes a 9% escalation in "hard cost" per annum every 12 months thereafter.



### Existing Conditions Documentation

The following notes, plans, elevations, details, and other images represent existing conditions and functional arrangements of the Hanley House facility. Plan and elevation drawings were prepared based on site verified and measured information, and were compared with similar documentation provided by the Owner. Applicable drawings and details are made part of this report as an appendix, and are for the purpose of study / analysis only.



Credit: MapQuest, Inc.

Context Map - Not to Scale

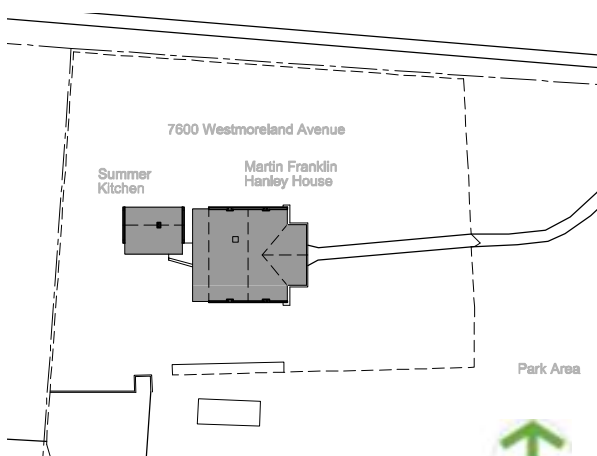


NORTH





Site Aerial Composite Plan - Not to Scale



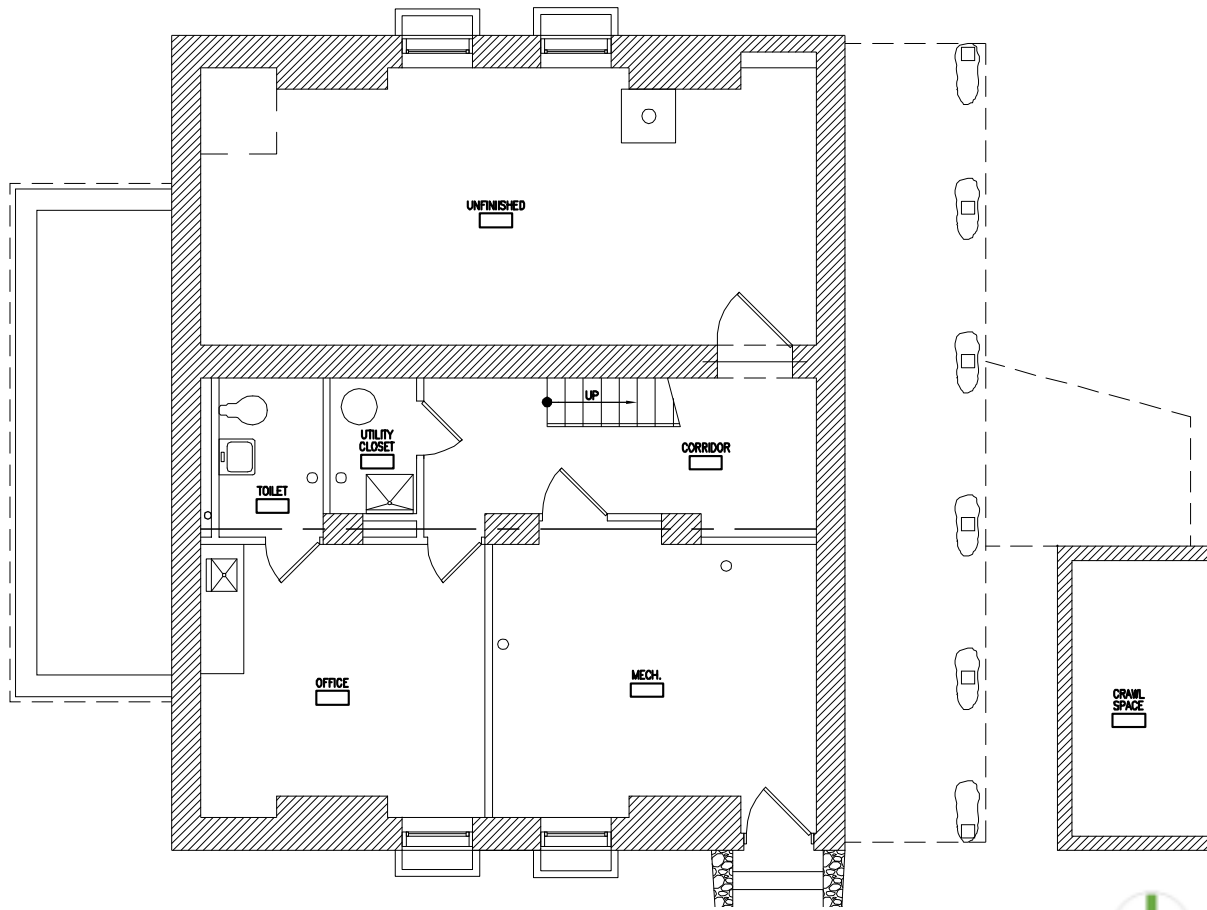
Site Plan Image - Not to Scale



Aerial Image - Not to Scale



section  
**3**



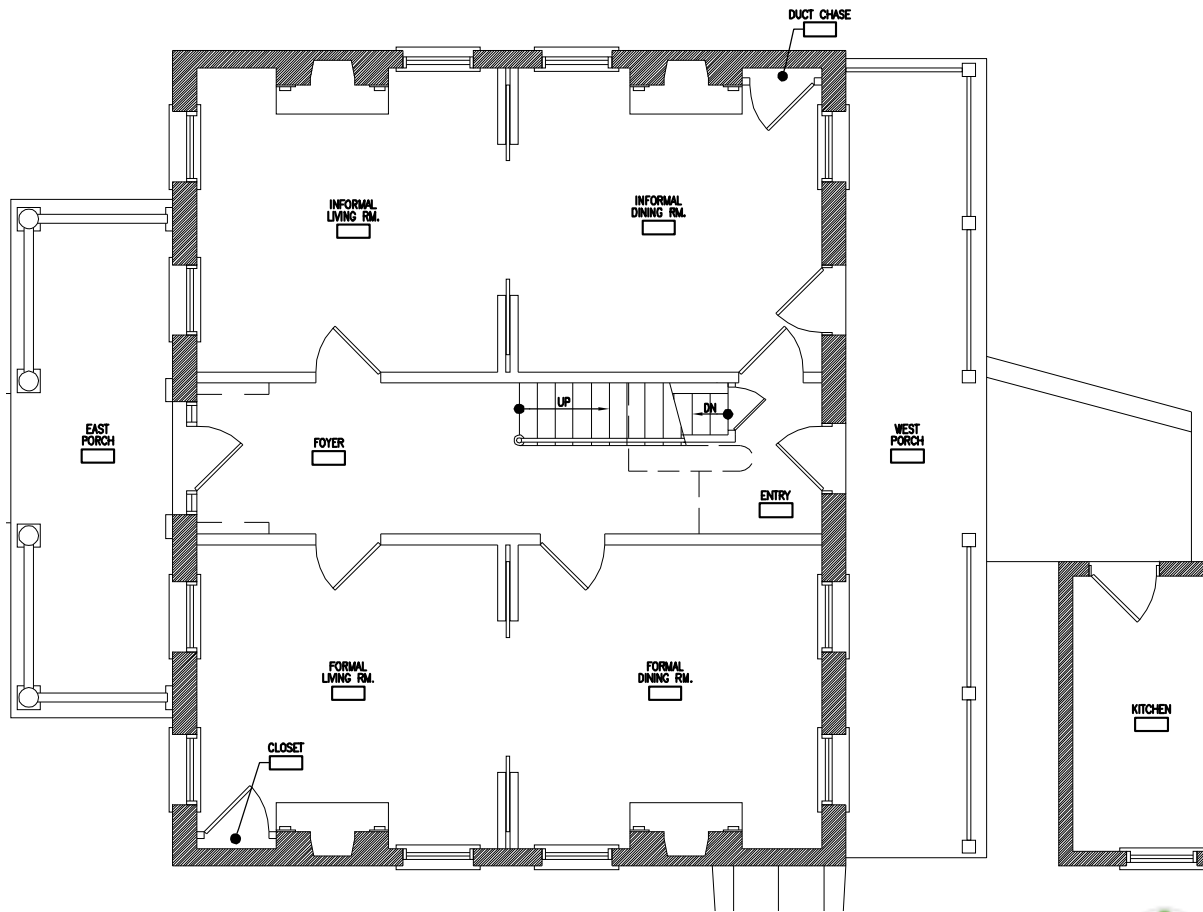
Ground Level Partition Plan - Not to Scale



View to Main Entry at East Porch [LEFT]



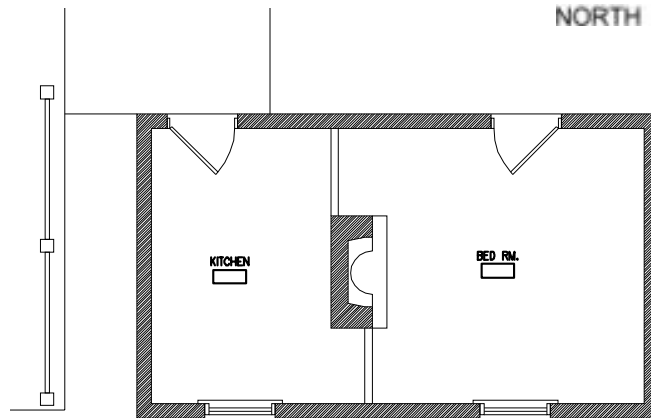
Partial View to West Porch



First Level Partition Plan - Not to Scale



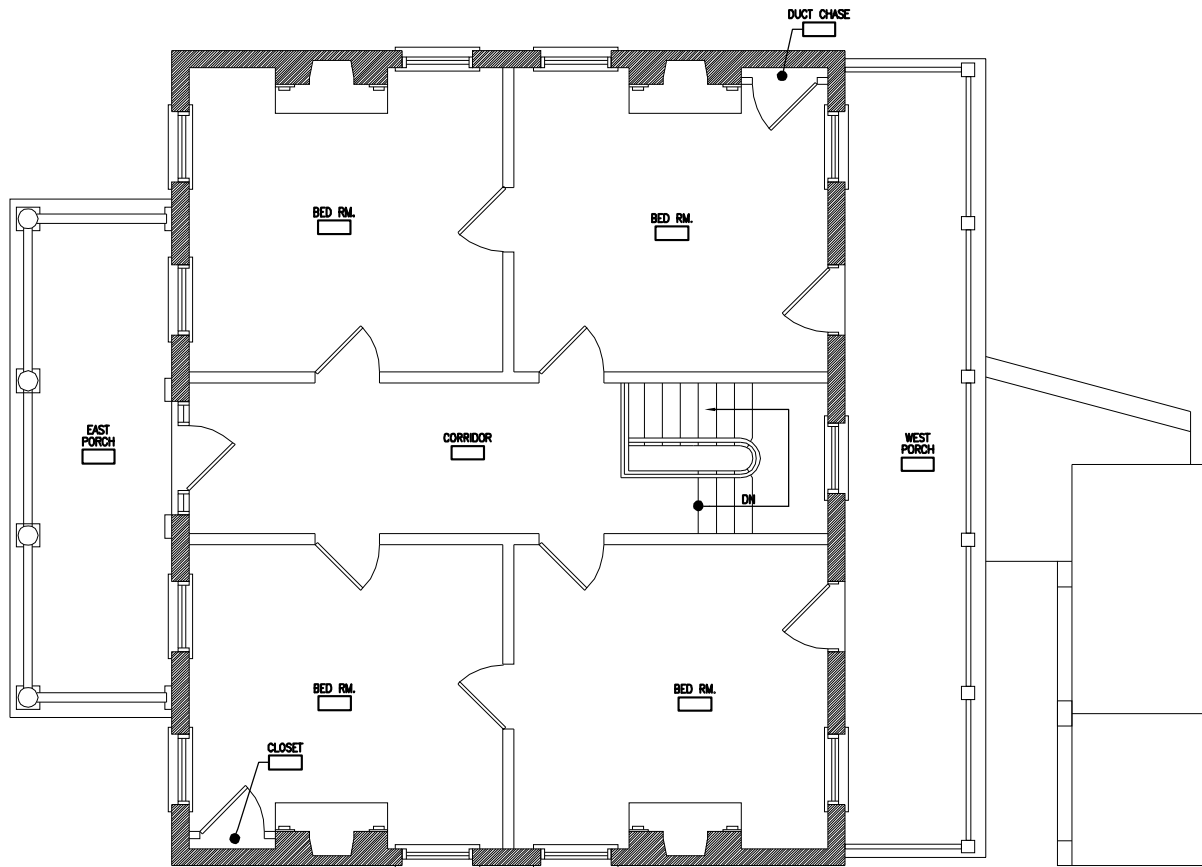
First Level Hanley House- Interior View



Summer Kitchen Partition Plan - Not to Scale



section  
**3**



Second Level Partition Plan - Not to Scale



View to East at East Porch Second Level [LEFT] and View to South at West Porch Second Level

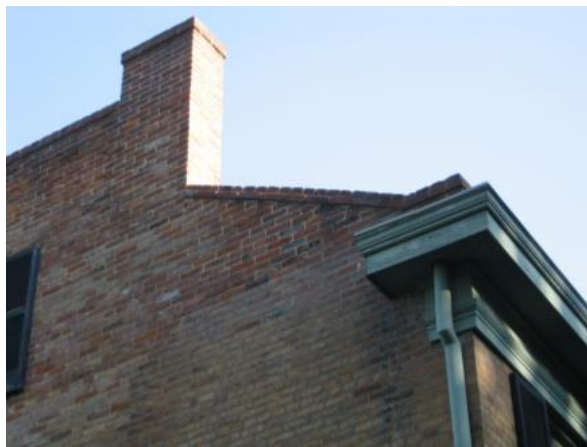




Hanley House South Elevation - Not to Scale



South and West Elevations [LEFT]



Southeast Parapet and Box Gutter



section  
**3**



Hanley House East Elevation - Not to Scale



Partial East Elevation [LEFT]



Typical East-Facing Windows



Hanley House North Elevation - Not to Scale



North Elevation [LEFT]



Summer Kitchen North Elevation



section  
**3**



Hanley House West Elevation - Not to Scale



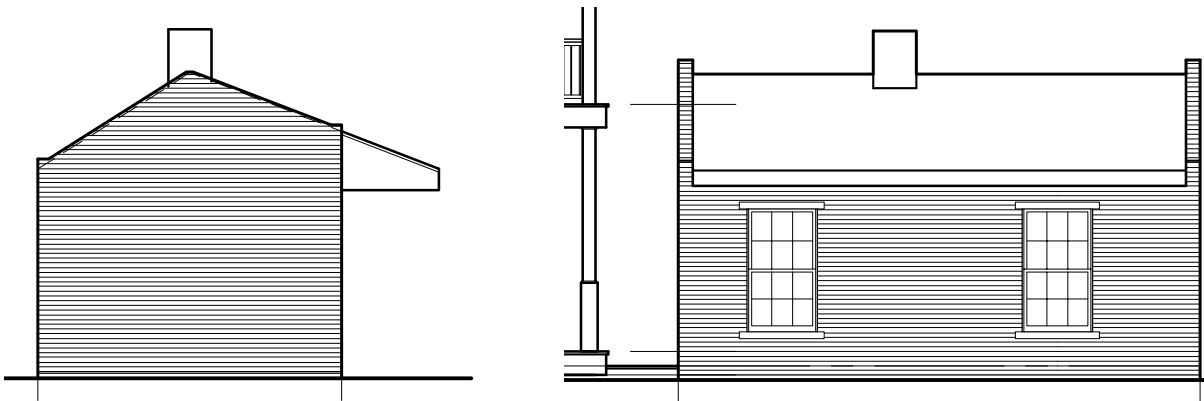
Partial Hanley House West Elevation [LEFT]



View to North at West Porch Second Level



Summer Kitchen West Elevation - Not to Scale [TOP LEFT] and North Elevation - Not to Scale



South Elevation - Not to Scale [BOTTOM LEFT] and East Elevation - Not to Scale



Notes on Existing Construction:

Although only a single story outbuilding, the Summer Kitchen and Hanley House main structure share the same basic construction methodology.

All exterior walls are multi-wythe clay brick, with directly applied plaster at interior faces and wood framing that bears directly on the brick walls for floor framing and roof framing. Roof systems are matching shingle type (replaced) on 1x split wood decking with copper flashing.

Structural lintels at all fenestration (windows, doors) consist of wood timbers or wood framing (E and W elevations), or hidden wood timbers.



Summer Kitchen South Elevation



Existing Conditions Assessment

The following captioned photographs and graphics identify liabilities and deficiencies with the current Hanley House historic site which directly or indirectly relate to stabilization of the main structure and its adjacent outbuilding. In particular, the following images are representative of areas and aspects of existing construction which concern weatherproofing and exterior envelope, structural systems and elements, and mechanical and electrical systems and infrastructure.

The photographs, graphics and descriptions which follow are the result of careful examination and analysis of the existing facility, and are provided as a framework of baseline recommendations for building stabilization and maintenance.



Detail at Support West Porch



View to Typical Interior Duct Chase

Further, issues raised and documented in this section are a summary of aspects of the existing construction which will likely require refurbishment or replacement in order to preserve the Hanley House and Summer Kitchen for future use. Observation and analysis of existing conditions was performed under the auspices of the site continuing to be used as a museum and park space, maintained and operated by the City of Clayton and open to the public.

That being said, this work has been conceived of and recommended as potentially independent of the overall use and operation of the site as a museum, and is intended for successful implementation either concurrent to, or prior to preservation and / or replacement of interior artifacts, furnishings, and some finishes. Likewise, this work is proposed and conceived as executable independent of any future potential additional construction on the site - such as development of an interpretive center program.



Detail at Typical Deteriorated Clay Masonry [TOP LEFT]



Detail at Typical Deteriorated Cement Tile Finish Roofing System [TOP RIGHT]



Detail at Typical Deteriorated Wood Window and Shutter [LEFT] and Detail at Typical Deteriorated Wood Box Gutter, Sheet Metal Downspout and Clay Masonry at Partial South Elevation [RIGHT]







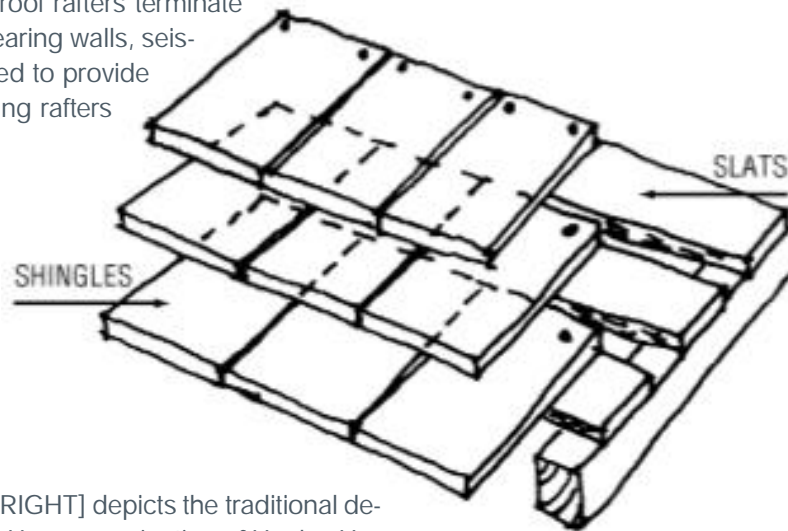
Roof Construction - East elevation [LEFT] shows orientation of roof pitch with box gutter and gable design. Detail images to right and below depict typical relationship between masonry bearing walls, projected parapets, chimneys (four such), sheet metal flashings, and cement tile finish roof. Note arrangement of low parapet wall as termination for roof system.



Roof Construction - Detail image to right shows missing cement roof tile at east facing field. Moss is visible in several areas of east facing roof, as are oddly spaced roof tiles.



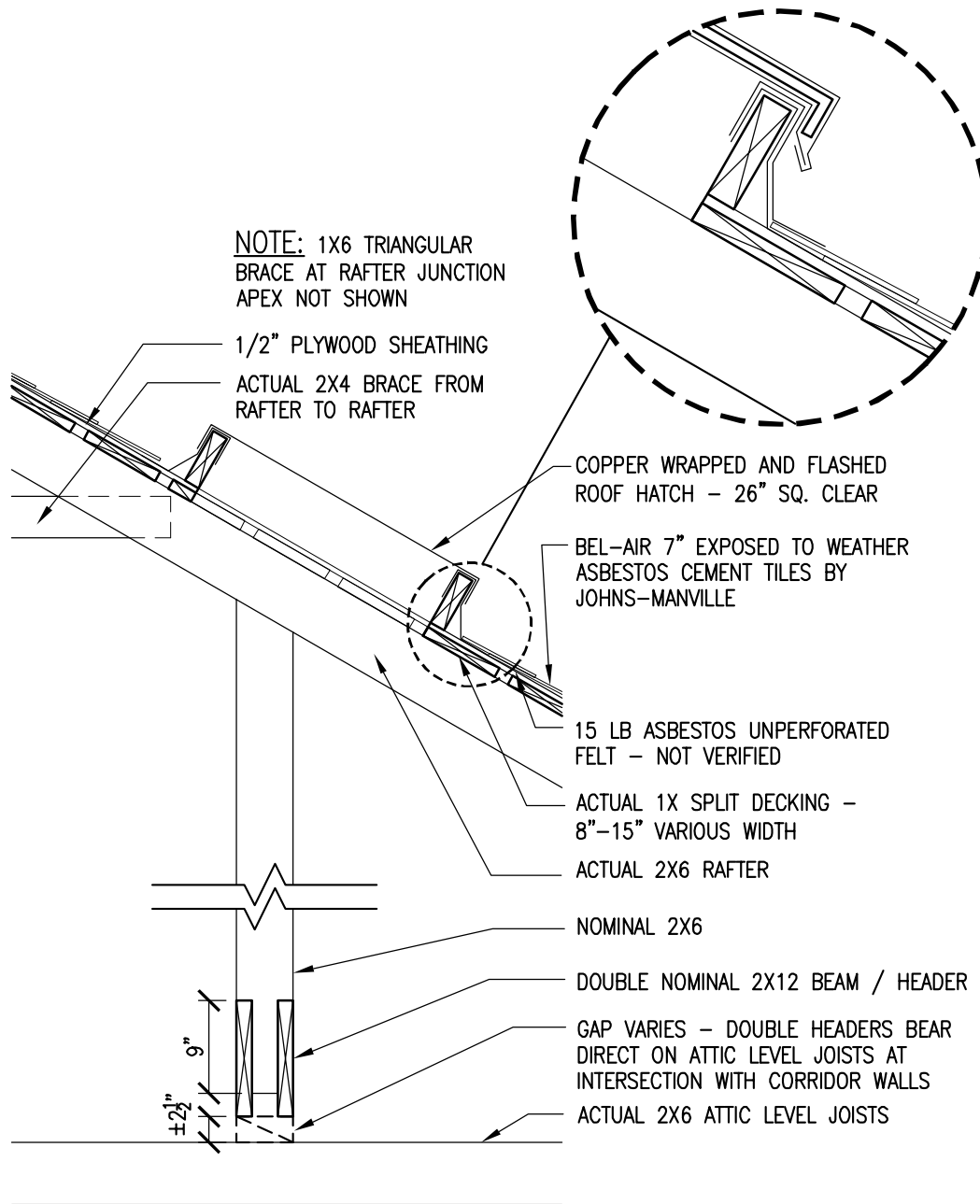
Roof Construction - Detail images show the existing roof system at the attic level. Ca.. 1855 rafters have been doubled [TOP LEFT], supported with vertical members, and bolstered by a double 2x12 beam running from north to south exterior bearing walls, while rafter vertices have been braced with plywood and the entire roof covered with 1/2" plywood [TOP RIGHT]. Given that existing roof rafters terminate directly on east and east exterior bearing walls, seismic bracing would be recommended to provide additional loading surface for existing rafters at the tops of masonry walls.



Roof Construction - Detail sketch [RIGHT] depicts the traditional design for a cedar shake roof system. Upon examination of Hanley House, it appears that this was how the roof was originally constructed - split sheathing (labeled as "slats" in the sketch) is visible in the attic, and the wide (30") spacing of original rafters (darker in color) would only have permitted a relatively light-weight finish roofing material, such as wood shakes.

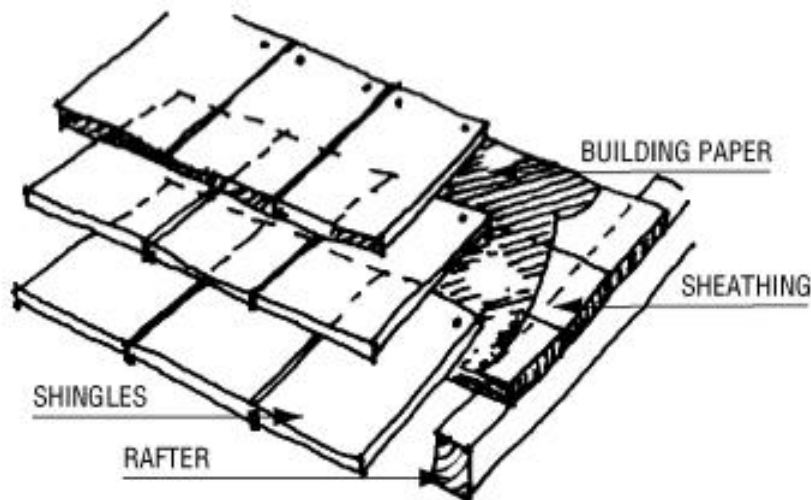
Credit: Heritage Properties Unit, Ministry of Citizenship, Culture and Recreation, Canada





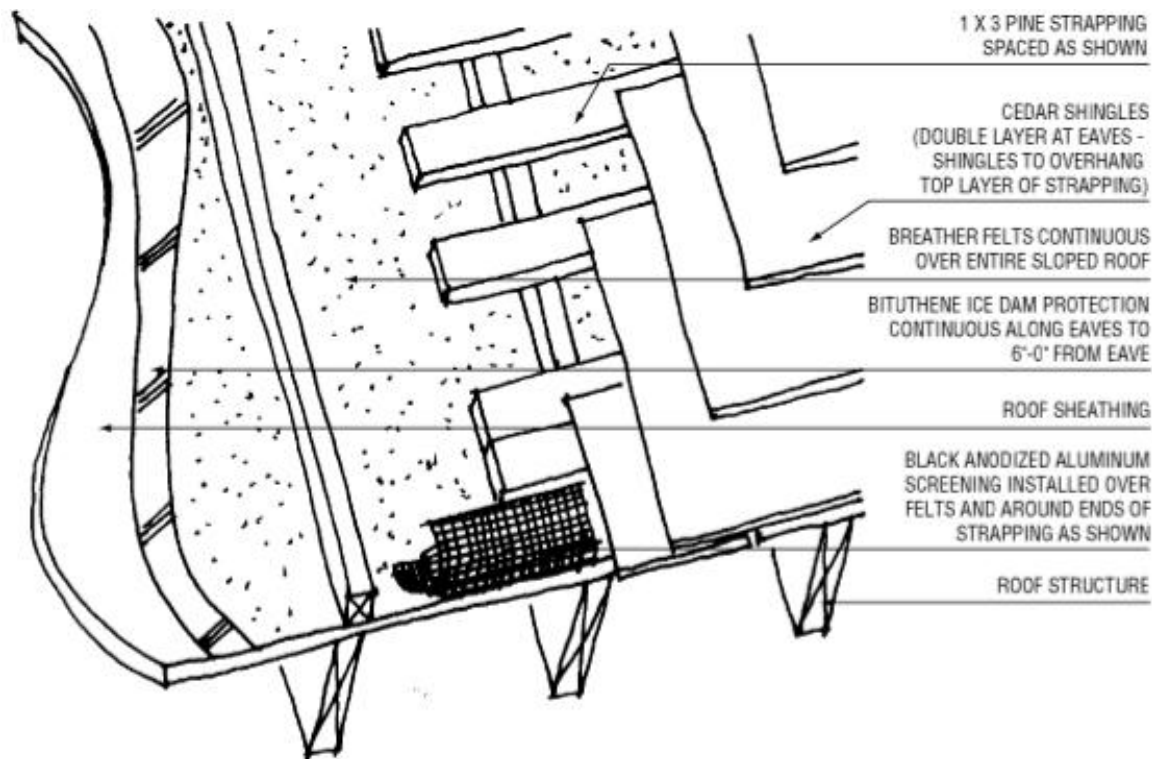
Roof Construction - Detail sketch [ABOVE] represents existing conditions of the Hanley House roof construction. Note the double 2x12 beam / header at the bottom of the sketch - new wood framing (including the double beam / header, 1/2" modern plywood sheathing, and 2x6 vertical posts at each rafter) were installed as a method of supporting the asbestos cement tile roof installed ca. 1969. This condition is visible in images from the interior of the attic on pages 66 thru 68 of the report - there is a direct correlation between addition of these beams and cracking in interior plaster on the first and second floors of the home.





Credit: Heritage Properties Unit, Ministry of Citizenship, Culture and Recreation, Canada

Roof Construction - Detail sketch [TOP] depicts the contemporary design for a cedar shake roof system. Note that split sheathing has been butted close together (labeled as “sheathing” in the sketch), and has also been covered with a building paper below the shingles.



Credit: Heritage Properties Unit, Ministry of Citizenship, Culture and Recreation, Canada

Roof Construction - Detail sketch [ABOVE] depicts a modern design for a vented cedar shake roof system. Contrary to traditional and contemporary cedar roofs, this design encourages greater life of roofing finish material, and roof framing by ventilating more thoroughly. However, it also applies additional weight to the structure of the roof through added framing (labeled as “1 X 3 pine strapping” in the sketch).





Roof Construction - Detail images show sheet metal step flashing to parapet walls and sealant joints [TOP LEFT], clay masonry parapet end-of-wall condition and wood trim [TOP RIGHT], typical roof hatch in west-facing roof field [BOTTOM RIGHT], and wood trim at box gutter with sheet metal pipe downspout. Note that hatch is covered and not accessible from interior at attic level.



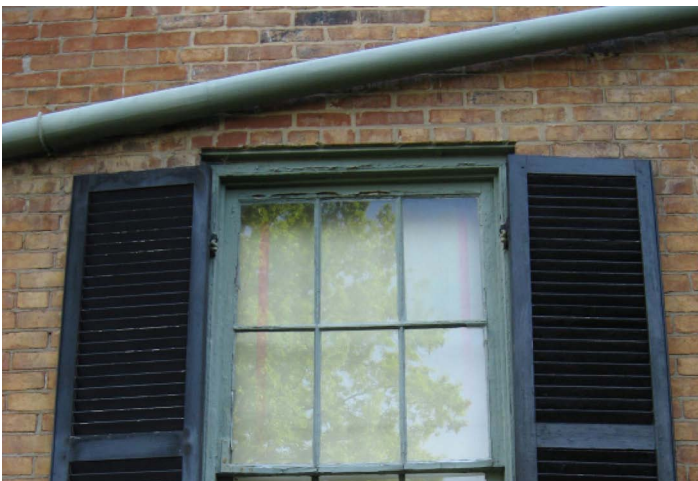
Detail image [LEFT] shows failed slate tile found at grade, west elevation of Hanley House. This was likely used to patch a failed cement tile during the past thirty or so years. It should be noted that slate tiles are significantly heavier than cedar shakes and cement tiles, and so should not be used to patch large areas of the Hanley House roof without a more thorough understanding of existing roof framing design and load capacity.



Sheet Metal Gutter and Downspouts - Detail images show transition from sheet metal-lined box gutter to sheet metal pipe downspouts at building east [RIGHT], and relationship of downspouts to windows at partial South elevation. Discoloration on brick suggests that at least one different sheet metal downspout design has been used at the south (and north equal) elevation.

It should be noted that although the sheet metal-lined box gutter (east) and hung gutter (west) sizes and downspout diameter are believed to be adequate for drainage of Hanley House's roof, the locations of elbows, seams, and fittings appear to seriously diminish the capacity of this storm water drainage system.

Further, there is no capacity of clean-out of accumulated debris from the downspouts, nor for the relief of ice.



Deterioration of windows and walls at the south and north elevations appear to be due in measurable degree to failed seams and fittings in the downspouts - lintels and clay brick masonry demonstrate a high quantity of wear to due routine surface water erosion, and penetration of storm water that has frozen and thawed, causing movement damage.





Sheet Metal Gutter and Downspouts - Detail images show routing of downspouts from box gutter (at Hanley House east) toward Summer Kitchen and termination at storm water boots and below-grade storm sewerage. Hung gutters [BELOW] are shallow but appear to be adequately sized.



Drainage of storm water from the Hanley House and Summer Kitchen roofs is compounded not only by the lengthy, twisted routing from initial collection to final sewerage, but also by the quantity of disposal. It is presumed that historic authenticity directed only 2 such storm water boots [LEFT]





Exterior Clay Brick Masonry - Detail images depict varying states of existing clay brick masonry at typical high points, including SW and SE chimneys [TOP LEFT, TOP RIGHT], and NW corner at drip from parapet corbeling [LEFT].

Note the horizontal line which extends from roughly the top of box gutter across the south (and north equal) elevation - this may be the break between original (painted) field brick, and relaid, cleaned, or replaced brick. Regardless, the line suggests a significant effort to replace failed brick units, remove and replace failed mortar, and generally refurbish these portions of the exterior masonry walls.

This work was presumably undertaken ca.. 1970, and was weather satisfactorily - in general, clay brick at the Hanley House is in serviceable condition. Mortar joint conditions and types vary by location, though, with many areas standing to benefit from limited or even complete cutting-out and replacement.



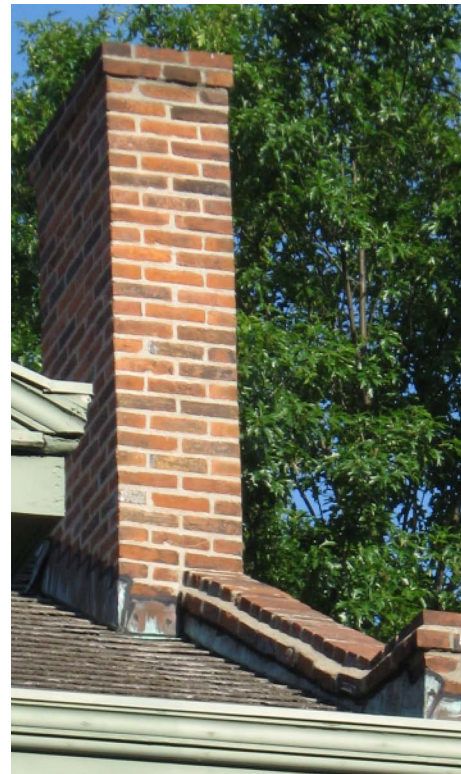


Exterior Clay Brick Masonry - Detail images depict the relationship of attic level fenestration and chimneys at partial north elevation [TOP LEFT], and long-run settlement cracking at SW chimney [RIGHT].



Exterior Clay Brick Masonry - Detail image depicts the design of masonry parapet cap [ABOVE] at Hanley House NE corner. Sheet metal step flashing engages back-side and end of parapet, with mortar wash applied from row-lock at top of parapet to first corbeled course. The undulating appearance of clay brick at the parapets suggests that they may have been repaired before.

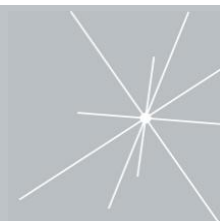




Exterior Clay Brick Masonry - Detail images depict the conditions of high points clay brick masonry at Hanley House north including north, west [ABOVE], east and south [RIGHT] faces of NE chimney. Note the appearance of brick units with spalled or pocked faces - these may be interior wythe brick which were original to the house, but which were relocated to the building exterior as a repair.



Detail images depict existing condition of clay brick masonry repaired ca. 1970 or after at SW chimney high points [ABOVE], and ceiling and beam pocket for roof at west porch second level [LEFT]. Note the contrasting color of mortar, and the relative depth of repaired joints.





Exterior Wood Decks, Railings and Trim - Detail view to east facing gable and tops of columns at Hanley House east elevation [ABOVE], and north extent of gabled east porch roof [BELOW LEFT]. Deterioration of the substrate is masked by intricacy in the design of trim - cornice and banding is in need of patch repair or replacement, and new paint throughout. The gable sheathing at east face appears to have been repaired at least once since ca. 1970.



Exterior Wood Shutters - Detail view to example of extreme deterioration visible in existing wood shutters [RIGHT]. It is presumed that ca. 1970 renovations replaced some shutters in their entirety - this image depicts the condition of original (mortise-and-tenon) shutters with failing louvers, rotted stile and rail components, and failing finish.







Exterior Wood Shutters - Detail images show various conditions of existing Hanley House shutters, including original position-holding hardware [ABOVE], typical replacement shutter [RIGHT], and extreme component and finish deterioration encountered on original shutters.



Detail image [LEFT] depicts the mortise-and-tenon construction method used to assemble original wood shutters at Hanley House - note desiccated and cracked condition of stile (vertical member), and off-set surfaces of the tenons as they appear at the left side of the stile.





Exterior Wood Windows - View to first level window units at south side of Hanley House [ABOVE], and detail views to clad wood sill construction at south elevation [RIGHT, and BELOW]. Note the cracked and missing coverage of the cladding, and the saturated appearance.



Hanley House south elevation would logically have been the most impacted of all exterior surfaces by storms and adverse weather. This portion of the site has had the least amount of protection - either natural or man-made - from wind, rain, and sun. It has also been observed that storm water from the downspouts above routinely washes over the wall surfaces here (and at north elevation). Existing wood window units and frames have likely been rotted through due to trapped moisture.





Exterior Wood Windows - Detail images show designs and conditions of various Hanley House lintels, including painted steel angle at first level south [ABOVE], and no apparent lintel with brick row-lock header at first level north [RIGHT]. Steel angle lintels do not appear to be original.



Exterior Wood Windows - Detail images show no apparent lintel with brick row-lock header at first level west [ABOVE LEFT], and painted wood timber at first level east [ABOVE RIGHT]. Although wood timber lintels (found only at the east elevation of Hanley House) appear to be original, they are at the end of serviceable life. This report would recommend that all windows not already supported by one be augmented by a concealed steel angle - said steel could be installed behind the exterior wythe of clay brick, and could be painted to match. All steel should be flashed to evacuate water.







South and West Elevations [ABOVE]  
North Elevation [RIGHT]



Partial View to West Porch [ABOVE]  
Partial East Elevation [LEFT]



Exterior Wood Windows, Decks, Railings and Trim - Detail images depict various deteriorated conditions of windows and surrounding original trim at Hanley House, including typical window fenestration design at first level east under porch [LEFT], and typical sash and sill at second level west under porch [ABOVE].



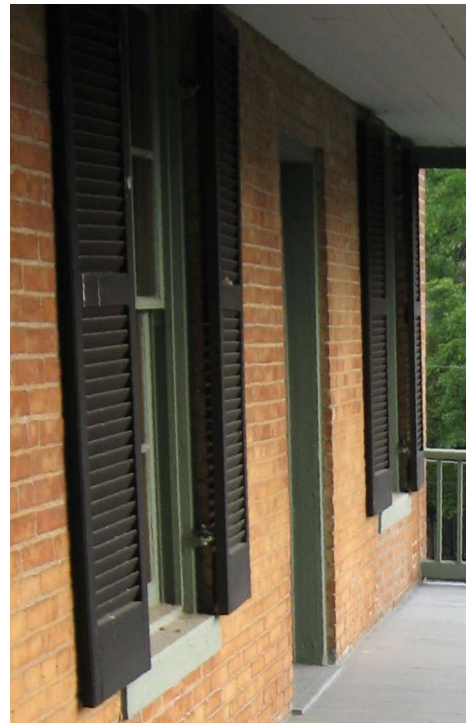
Detail images show typical conditions of sash, sill and shutter at first level north [ABOVE LEFT and RIGHT]. These sills are not clad like the south elevation sills, but their finish is failed and the likelihood of moisture having contributed to deterioration of the window units is high. Note design of trim end is scalloped - this flourish is typical at all north (and south equal) elevation sills.







Exterior Wood Windows - Detail image shows design and condition of no apparent lintel with brick row-lock header at first level north [ABOVE] Hanley House. Note that brick header is off-set and bowed downward due to a lack of structural capacity - the brick above this typical opening is likely supported entirely by the wood window unit.



Exterior Wood Windows - Views to various Hanley House window conditions showing original and replaced sashes and glazing. Images include second level west fenestration and trim under porch [TOP LEFT], attic level north fenestration and trim [ABOVE RIGHT], and first level south fenestration and trim [ABOVE LEFT]. Note that all items in these views appear to be original except the sash frame at attic level north (with south being equal); glazing in these sash frames may be original.



Exterior Wood Windows - Detail images show typical condition of window units and trim at Hanley House attic level [ABOVE and RIGHT]. Wood sills, jambs, and window sash frames appear to be rotten, with finishes failed and in need of replacement. Evidence in the attic at both north and south ends suggest that original glass panes were re-glazed into replacement sashes - possibly ca. 1970. Also, there are glazed shutters abandoned in the attic which may once have been employed to vent and close the attic at each end.



Exterior Wood Windows - Detail images show condition of typical clerestory units at Hanley House ground level [ABOVE LEFT and RIGHT]. Wood sills, jambs, and window sash frames appear to be rotten, with finishes failed and in need of replacement. Note that unpainted steel lintels were installed - possibly ca. 1970 - at the SW and both north clerestory openings. These lintels are serviceable, but are recommended to be ground and painted.







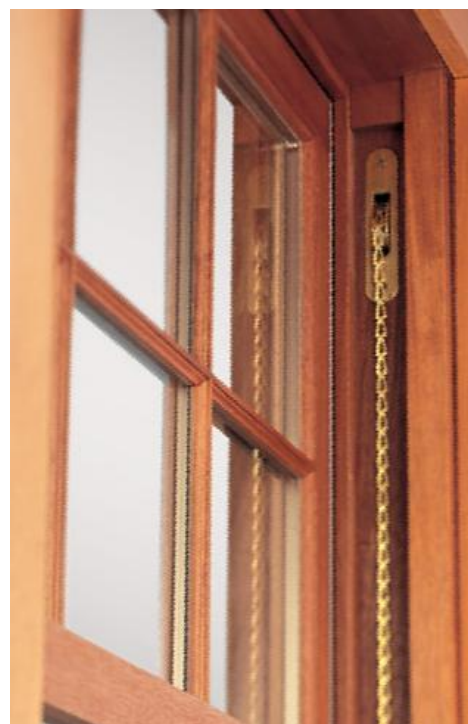
Exterior Wood Windows - Detail images show design and condition of window sashes and glazing at Hanley House, including typical deteriorated putty glaze and wood stile and rail of sash frame [ABOVE], and wood sash frame stile, frame jamb, and clad sill at south elevation [LEFT].

It would be recommended that any effort to conserve or replace windows at Hanley House make use of a putty glaze for historical authenticity. In the course of refurbishing and conserving existing window units, though, the finishes to be removed - including existing putty glaze throughout and sill cladding at south side - are purported to all be asbestos- and / or lead-containing materials (refer to environmental survey report dated September 2006 for additional related information).





Credit: To Be Verified [TOP CENTER]



Credit: Marvin Window and Door Store [TOP LEFT, TOP RIGHT, and BOTTOM LEFT]

Exterior Wood Windows - Detail views depicting potential design for replacement window sashes and hardware, including double hung units with chain-and-pulley operation, brass locks, and single-glazed, authentic divided lites.



Credit: Re-View : Complete Source for Historic Windows

To match Hanley House's original window design and simultaneously provide improved insulating value for energy efficiency, this report would recommend any replacement window units be double hung sashes with single-glazed, authentic divided lites and an insulating panel at window interior [TOP LEFT and BOTTOM LEFT]. Image [ABOVE] depicts installation of putty glaze.





View to north at west porch second level [ABOVE]  
View to main entry at east elevation [RIGHT]



View to doors at first level west elevation [ABOVE]  
Detail image of typical exterior wood door condition [LEFT],  
showing original hardware, and failed finish on raised panel,  
stile-and-rail construction wood slab.





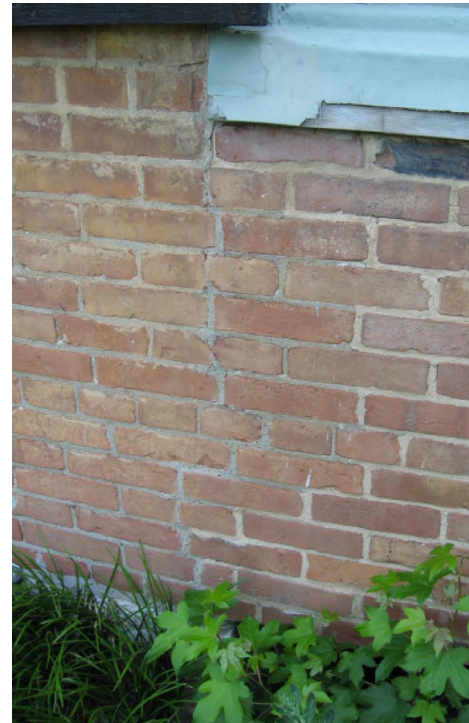
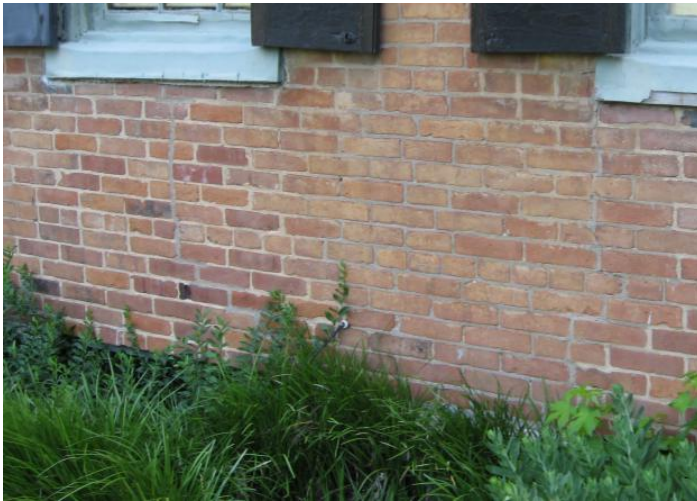
Detail view to ground level entry through wood cellar doors [ABOVE], at NW corner of Hanley House. Note relatively shallow depth of porch, between west wall and railing [ABOVE and RIGHT]. With the addition of a ramp, these west doors and porch represent a potential secondary egress route to grade, if the structure is classified as a commercial occupancy for the sake of renovations.



Detail images show typical wood exterior door design, including wood casing, trim and relationship to exterior clay brick masonry [ABOVE and LEFT].

Similar to the majority of windows at Hanley House, these door openings would benefit from the installation of some structural relief above, possibly through a steel angle lintel.





Exterior Clay Brick Masonry - Detail images depict the conditions of south facing clay brick masonry, including settlement cracks below first level fenestration [TOP LEFT and RIGHT], and long-run settlement cracking at SW corner [BOTTOM LEFT and RIGHT], extending from near stone foundation upward to parapet and SW chimney.

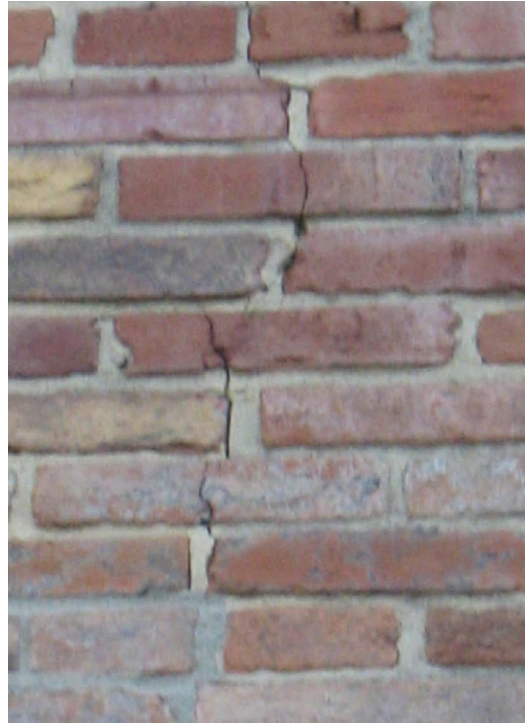


Note that south facing exterior clay brick masonry demonstrates a large variation in conditions - while some areas of wall are serviceable, there are several key faults which suggest movement in the multi-wythe brick masonry walls, with significant cracking of mortar joints and brick units.





Detail view to long-run settlement cracking at SW chimney [TOP LEFT and RIGHT]. This is the most substantial sign that movement of the Hanley House structure has occurred, whether due to conflict between interior wood floor framing and clay brick exterior walls, or differential settlement of the stone foundation below.



Detail view to typical south facing clay brick masonry [ABOVE and LEFT], showing deteriorated and non-serviceable mortar conditions. Note that tuckpointed mortar joints are cracked and open at the perimeter of most brick units, and likely allow a substantial amount of storm water to infiltrate the wall construction. Replacement mortar appears to have been installed in shallow depths, and in a design that was much harder than the original dry-press, hand-made brick units - thus resulting in spalled and chipped faces, missing mortar segments, and even cracked bricks.







Exterior Clay Brick Masonry - Detail images depict the conditions of east facing clay brick masonry, including patch replacement brick [LEFT], settlement cracks below first level fenestration at wood timber lintel [TOP RIGHT], field joint failure at tuckpointed mortar [BOTTOM LEFT], and settlement cracking at NE corner below first level fenestration [BOTTOM RIGHT].

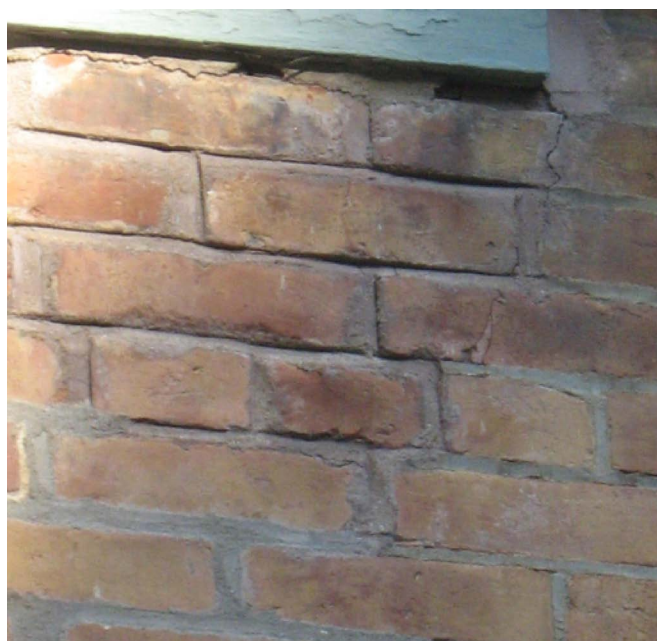
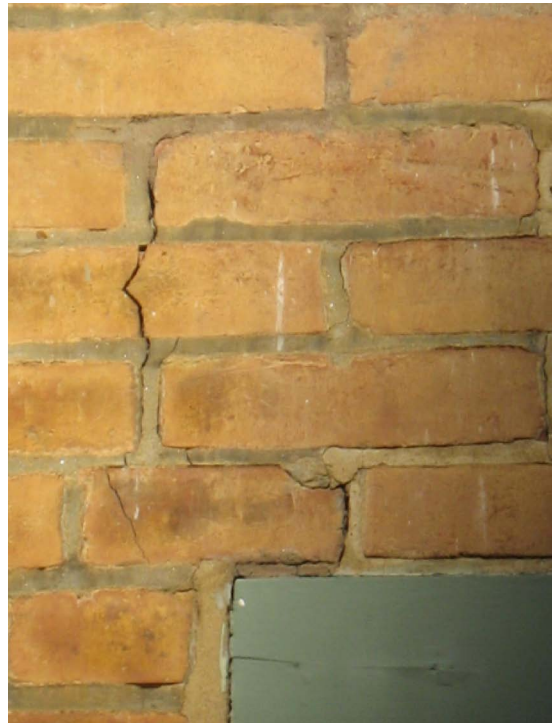


Detail view to typical east facing clay brick masonry [ABOVE and LEFT], showing deteriorated and non-serviceable mortar conditions. Note that replacement mortar appears to have been installed in shallow depths, and in varying colors, hardnesses, and joint dimensions.

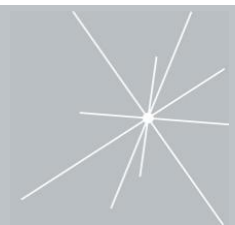




Exterior Clay Brick Masonry - Detail views to east facing clay brick masonry showing settlement cracking at north fenestration, first and second levels. Note that mortar joints and brick units have cracked through at north extent of east elevation immediately above foundation [BELOW LEFT].



Detail view to east facing settlement crack in clay brick masonry [ABOVE LEFT], showing abandoned crack monitor device. Note that tuckpointed mortar joints at some areas of the east have been installed in a tooled (canted) profile - this is different than virtually all other (flush) joints.







View to North Elevation [ABOVE]  
Detail view to east most settlement crack at north [LEFT]



Detail images showing limited tuckpointing repair at brick masonry field [ABOVE] and between first and second level fenestration on north side [RIGHT].





Detail images showing limited tuckpointing repair at brick masonry field [ABOVE and BELOW] and above wood cellar doors on north side [RIGHT].



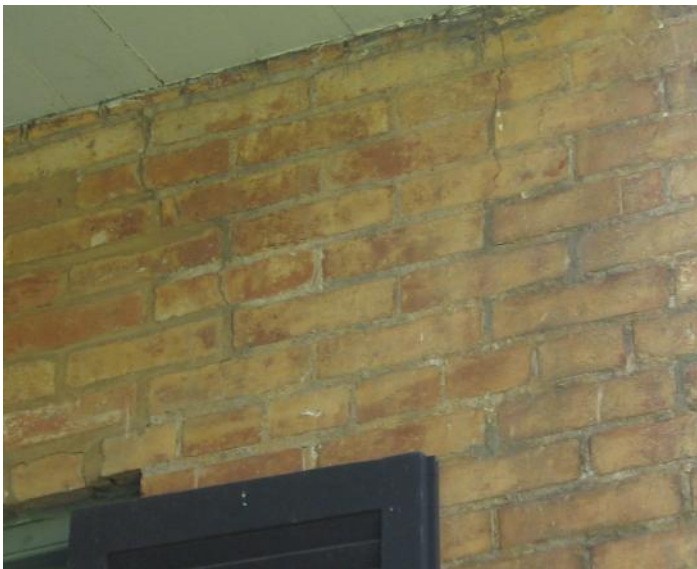
Detail image [ABOVE RIGHT] depicts degree to which ca. 1970 renovations are expected to have addressed deteriorated clay brick above first level window heads at north.







Exterior Clay Brick Masonry - Detail images depicting the condition of west facing clay brick masonry, including below second level west porch [LEFT], and at NW corner [ABOVE].



Detail images showing limited tuckpointing repair at west facing brick masonry field [ABOVE and RIGHT]. Due to the varied color of mortar and the cracks having re-opened, it is recommended that ca. 1970 mortar repairs in settlement cracks be replaced with sanded sealant.



Exterior Clay Brick Masonry - Detail images depicting the condition of west facing clay brick masonry, including below roof overhang at attic level west porch [ABOVE], and at SW corner [RIGHT] where some tuckpointing has been done.



Detail image depicting the condition of west facing clay brick masonry immediately above first level west porch floor [above]. Note quantity of open, failed, and missing mortar joints below window sill. Despite protection provided by the west porch overhang, this area demonstrates continued movement and deterioration of exterior clay brick masonry, and should be repaired.

