Structures North
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5 June 2012

Agricola Corporation
PO Box 861
Chicopee, MA 01014

Attention: Gregory Farmer

Reference: Simes House, Plymouth, MA

Dear Greg:

On 8 May 2012 I visited the Simes House in Plymouth to observe it structural condition. The following is a summary of conditions that were noted during this investigation and accompanying *recommendations*.

Structural Description

The Simes House is a large, French Second Empire style, former residence located on the east side of Manomet Point Road, and for the purposes of this report, the Simes House will be considered to face west.

The Simes House has three floors and a full basement, the third floor being nested within the Mansard portion of the roof. The main, front section of the house is “four-square” in plan with two double loaded chimneys flanking a central, east-west running stair hall. A verandah crosses the front and south sides of the house.

To the east of the front section is a two-bay rear ell and against its north side is an enclosed porch.

The roof structure is period-appropriately framed with dimensional lumber rafters in a hip fashion above the mansard knuckle, and with steeply sloping mansard rafters that act as wall studs below.

The second floor is framed with sawn lumber joists running in the north-south direction between stud bearing walls at that exterior and at the interior, which flank the center stair hall.

The first floor is also framed with north-south running sawn lumber joists, but which span between the perimeter foundation sill and east-west running timber beams, that also support bearing walls, at the center.

Noted Conditions and Recommendations

Degrees of Urgency

1= Immediate threat to public safety and/or stability of the structure.

2=Possible or eventual threat to public safety and/or stability of the structure (level 1) if not corrected soon.

3=Will worsen to level 2 or cause other problems if not corrected.

4=Will eventually worsen and increase in severity if not corrected.

5=Would be a good improvement to make, eventually.

Exterior/ Verandah, Porches, Walls

Main House

- The exposed stone foundation has eroded mortar joints along much of the north, east and south facing elevations and *is in need of cutting and repointing with new, compatible mortar*.

  Urgency Level 3 / Structural Budgetary Estimate= $18,000.

- There is a diagonal crack in the east end of the north foundation and an open hole and crack in the foundation of the north facing window bay*, which need to be repaired*. The diagonal crack may have been caused by the same settlement that is affecting the north porch foundation of the ell.

  Urgency Level 3 / Structural Budgetary Estimate= $2,500

- The verandahs that run along the south and west elevations are in a state of near to advanced collapse *and must be reconstructed*.

  Urgency Level 2 / Please see Architectural Estimate.

- The concrete steps that lead up to the west verandah are tilted backward *and must also be rebuilt*.

  Urgency Level 3 / Structural Budgetary Estimate= $2,500.

- The main sill is rotted at the northwest corner of the house, as well as intermittently in other places. *This timber should be exposed and inspected, and rotted sections removed and replaced*.

  Urgency Level 2 / Structural Budgetary Estimate= $9,000.

- The northwest corner boards are spreading apart, suggesting that the base of the corner wall structure may also be compromised *and in need of repair*.

  Urgency Level 2 / Structural Budgetary Estimate= $1,500

- The east half of the south wall is slumping downward due to advanced decay and internal failure, the mansard roof surface above it has become concave, and the top mansard knuckle dips *(please see "Interior/ Second Floor", below)*.

- The south elevation's second floor east window is missing.

- The clapboard siding is missing from the second floor at the short east facing elevation and there are holes in the sheathing letting water enter the structure. *The wall must be repaired*.

  Urgency Level 1 / Please see Architectural Estimate.

- The mansard roof eave fascia on the west elevation is rotted and there is a hole in the north end of the east facing fascia.

Rear Ell

- The exposed stone and brick foundations have eroded mortar joints in several areas *that are in need of cutting and repointing*.

  Urgency Level 3 / Structural Budgetary Estimate= $1,500.

- The south and portions of the north sills appear to be rotted *and must be exposed, removed and replaced.*

  Urgency Level 2 / Structural Budgetary Estimate= $5,000.

- Both south facing stairways are in rotted and poor condition *and must be reconstructed*.

  Urgency Level 2 / Please see Architectural Estimate.

- The siding along with some of the sheathing is missing from most of the south wall *and must be replaced*.

  Urgency Level 1 / Please see Architectural Estimate.

- The rear ell slopes toward its northeast corner, probably due to settlement, and the north foundation under the porch, which consists of brick piers and concrete block infills, is loose and has noticeably shifted (*please see "Interior/ Basement/ Rear Ell"*).

- The above movement has left an open gap between the ell and the main section, *which must be filled.*

  Urgency Level 3 / Structural Budgetary Estimate= $1,000.

- The north eave of the low roof over the porch sags, probably due to foundation movements and internal rot. *The foundation and portions of the wall must be rebuilt.*

  Urgency Level 2 / Please see Architectural Estimate.

- There is a hole in the east fascia along the low roof eave and a hole in the wood wall at the basement level, below, *both of which should be repaired*.

  Urgency Level 2 / Please see Architectural Estimate.

Interior/ Basement

Main Section-

- The ends of the many of the north bay of the first floor joists are rotted where they bear on the north foundation wall and have been reinforced with relatively short scabs of wood. *Longer sisters should be added to the opposite faces.*

  Urgency Level 2 / Structural Budgetary Estimate= $4,500.

- Soil is washing into the basement through holes in the stone foundation at the west portion of the north wall. Such stone foundations are generally dry laid and are chinked and pointed on the interior face to keep soil and vermin from entering the basement. *The missing chinking and pointing must be replaced in these areas to fill the holes.*

  Urgency Level 2 / Structural Budgetary Estimate= $3,500.

- Mortar joints have become powdery and eroded many of the basement's brick piers due to rising dampness, that wicks upward from under the surrounding floor slab. *The piers can be repointed but should ultimately be reconstructed with less moisture susceptible materials.*

  Urgency Level 2 / Structural Budgetary Estimate= $2,500 now, $9,000 eventually.

- I could not view the condition of the sill from the basement but the overall condition of the main section's first floor framing appeared to be generally sound.

Rear Ell-

- The brick wall that separates the main basement stairway from the cellar has been damaged by rising dampness along with the northwest corner of the brick chimney base, with eroded mortar joints and a few spalled bricks. *These should be repointed and damaged bricks replaced. As in the case of the main section's piers, repair in lieu of reconstruction is ultimately a temporary, however somewhat long-lived solution, due to the perennial nature of the wicking action.*

  Urgency Level 3 / Structural Budgetary Estimate= $4,000.

- Soil is washing through the middle of the stone south foundation and *should be treated in a similar fashion to the main section*.

  Urgency Level 2 / Structural Budgetary Estimate= $2,500.

- The east and west ends of the north foundation under the porch also have soil washing through them, but accompanied by root growth, shifted concrete infills and leaning brick piers. There is also evidence, from above, that this foundation has significantly settled (please see "Exterior"), and much of the floor framing that is visible from the basement slopes toward it. *The entire north porch foundation should be replaced.*

Urgency Level 2 / Structural Budgetary Estimate= $22,500.

- The plaster is falling from the ceiling of the middle stair hall due to water damage from above (as an aside, I have inspected historic and abandoned buildings for 25 years and have never seen such a putrid toilet as the one that is adjacent to this space- *I would recommend that it be removed and the plumbing capped as it is a low-grade biohazard that can attract vermin in its present form)*.

  Urgency Level 2 / Please see Architectural Estimate.

- There is white fungus or mold growing on the underside of the porch framing and the end of a timber that bears on the north exterior wall is rotted through. *Much of the porch floor structure should re-framed or replaced.*

  Urgency Level 2 / Structural Budgetary Estimate= $3,600.

- There is a knawed hole in through the north end of the east wall and there was a dead raccoon under the porch at the time of my visit. *The hole should be patched.*

  Urgency Level 2 / Please see Architectural Estimate.

- The first floor structure over the very east end of the ell is rotted and the east ends of the joists have been sistered. *This framing and floor sheathing should be replaced.*

  Urgency Level 2 / Structural Budgetary Estimate= $12,500.

Interior/ First Floor

Main Section-

- The ceiling is damaged from water infiltration at the east end of the dining room and the south edge of the rear room, and the wall finishes are water damaged over the front room's south doorway. These conditions are indicative of water infiltration and related structural damage happening above (please see "Interior/ Second Floor", and "Exterior").

- This is also a hole rotted through the dining room floor, near its northeast corner, *that should be repaired*. This falls directly over the area in the basement where the joist ends are rotted.

  Urgency Level 2 / Structural Budgetary Estimate= $1,000.

Rear Ell-

- The ceiling and second floor are missing over the rear hall and the first floor surface has been damaged by water (please see "Interior/ Second Floor"). There is a rotted hole in the adjacent southwest corner of the kitchen floor *that should be repaired.*

  Urgency Level 2 / Structural Budgetary Estimate= $1,000.

- The kitchen floor sags in the middle, which is very common, but has been bolstered with timbers in the basement from below. The kitchen floor also slopes locally toward the south exterior wall, where in addition to the hole at the kitchen's southeast corner, there is also a hole along this wall's east end. As it is very likely that the south sill is deteriorated, *the entire sill should be exposed along with the bottoms of the supported framing members and all rotted or insect damaged wood should be replaced*.

  Urgency Level 2 / Structural Budgetary Estimate= $17,500.

- There is a rotted divot in the kitchen floor near the southeast corner and vine growth coming in through the adjacent east wall toward which this section of floor slopes. *The floor should be repaired (as noted under "Interior/ Basement") and adjacent wall conditions are moisture and rot related and should be investigated and repaired.*

  Urgency Level 2 / Structural Budgetary Estimate= $2,500.

- The brickwork that forms the east wall of the exposed brick chimney is buckling outward *and must be stabilized or replaced.*

  Urgency Level 2 / Structural Budgetary Estimate= $4,500.

- The porch floor slopes northward, which may have been intended for drainage, however the floor of the adjacent enclosed room also slopes northeast, which is an indication of the foundation wall settlement below.

- There is a gnawed and rotted hole in the floor of afore noted enclosed space which is directly above the rotted timber end noted in the basement

space below. *The rotted floor must be repaired (please also see "Interior/ Basement").*

Urgency Level 2 / Structural Budgetary Estimate= $4,500.

Interior/ Second Floor

Main Section-

- All of the interior walls that flank and surround the fireplaces have diagonal cracks seeming to radiate out from the mantles. This is due to the normal drying shrinkage that has occurred in the wood framed structure versus the non-shrinking brick chimney structures, which can even tend to grow. The wood moves down while in comparison, the brick moves up, thus resulting in the radiating cracks.

- In consistent fashion with the above, the wood framed floors and ceilings of all of the bedrooms slope away from the masonry supported fireplaces.

- The floors and ceilings of the southwest and southeast bedrooms dip along the south wall and there is visible rot and missing finishes around the south windows. This, along with conditions noted on the exterior, suggest that the wall has been seriously compromised and there was even a documented event where part of the wall blew in during a wind storm (requiring the bracing that is now visible within the southeast bedroom). *The floor structures above and, if needed, below should be shored and all interior finishes stripped to expose the affected wall structure. All damaged framing and sheathing should be replaced, which will unfortunately require some removal of siding and trim on the exterior.*

  Urgency Level 1 / Structural Budgetary Estimate=$5,500 (structure only).

- There is a localized hump in the floor of the southeast bedroom against the east wall which is may due to irregular support conditions related to the loss of the floor structure on the other side of the wall, *which should be investigated.*

  Urgency Level 3 / Structural Budgetary Estimate= $1,500.

- There is a hole in the east wall of the northeast bedroom and significant diagonal cracking. This is a response to water infiltration that has

damaged this wall along with the dining room ceiling and floor below. *After the water infiltration has been stopped and the wall repaired*.

Urgency Level 3 / Structural Budgetary Estimate= $1,000 (structure only).

- There are other, scattered diagonal cracks in wall finishes that most likely relate to differential wood shrinkage and in some cases sill damage below.

Rear Ell-

- The floor of the rear bedroom slopes toward the north and south, away from what appears to be a former wall line down the center of the room.
- The floor and ceiling are entirely missing from the bathroom, having been rotted away after years of water exposure and then followed by removal. *The water infiltration should be stopped and the floor and ceiling replaced.*

  Urgency Level 2 / Structural Budgetary Estimate= $2,500 (structure only).

- There is a hole in the stairwell ceiling caused by water leakage from the roof, *which should be stopped and the damage repaired*.

  Urgency Level 2 / Structural Budgetary Estimate= $1,000 (structure only).

Interior/ Third Floor

Main Section-

- As with the second floor, all of the interior walls that flank and surround the fireplaces have diagonal cracks seeming to radiate out from the mantles.
- Significant portions of the ceiling are missing due to water infiltration. This occurs in the following areas:
  - In the west dormer of the north mansard.
  - Surrounding all sides of the north chimney.
  - At the rear of the northeast bedroom.
  - In at least three places in the southeast bedroom.
  - Over the fireplace and middle of the southwest bedroom.
  - Over the stairway and at the rear of the stair hall.

All of this is a result of water infiltration through the failed roof.

- There is a rotted hole in the floor at the northeast corner of the southwest bedroom and at the west end of the stair hall, *both of which should be repaired.*

  Urgency Level 2 / Structural Budgetary Estimate= $2,000 (structure only).

- The floor of the southeast bedroom slopes toward the south wall and the interior finishes of the south mansard are cracked. This is due to the failure of the south exterior wall below, *which should be repaired (please see "Interior/ Second Floor")*.

Rear Ell-

- The brick chimney over the fireplace in the rear bedroom is cracked and plaster cracks radiate out from the hearth (in typical fashion). This is the lower extent of chimney damaged noted on the exterior *which should be repaired (Please see "Roof Level")*.

- There is a hole in the ceiling over the bathroom and the floor is soft and rotted due to water infiltration through the roof, *all of which should be repaired*.

  Urgency Level 2 / Structural Budgetary Estimate= $2,000 (structure only).

Roof Level

- The roofing system has failed and was partially covered by a blue FEMA type tarp at the time of my visit. There are open holes through the sheathing in the northeast valley and at the southwest corner of the south chimney. From below, one can see advanced signs of decay in the sheathing and rafters at several locations, especially at the attic stairway and over the bathroom. *The roofing should be stripped, the sheathing and rafters inspected and replaced where rotted, and a new roofing system applied.*

  Urgency Level 1 / Please see Architectural Estimate.

- The roof noticeably sags along the east half of the south mansard knuckle, due to the failure of the supporting wall below. *(please see "Interior/ Second Floor")*.

- The south chimney is crumbling and leans toward the southeast, the north chimney has cracks in its lower half, and the east chimney has partially collapsed. *The south and east chimneys should be reconstructed, and the north chimney should be repaired.*

  Urgency Level 2 / Structural Budgetary Estimate= $16,500.

Thank you for the opportunity to assist with this historic and architecturally significant structure. Please contact me if you have any questions or if we can be of further assistance.

Respectfully Yours,

John M. Wathne, PE, President
Structures North Consulting Engineers, Inc.

ATC did a walkthrough of the Simes House at 29 Manomet Point Road, Plymouth, Massachusetts, on June 1, 2012. The purpose was to review the building for various environmental concerns related to the proposed renovations.

The following table presents a list of the issues that will likely need to be addressed during renovations. Asbestos containing materials (ACM) that may be present, or were not observed, are noted, as well as a brief statement for each material, and an associated cost range. Other issues were also noted, most of which were discussed at the walkthrough.

Note that an ACM is defined by the MA DEP as any material or product containing one percent or greater asbestos by weight.

Hazardous Material	Notes/Cost ranges
Asbestos Issues	
Window glazing	One sample was collected, and analyzed with "trace" amounts of anthophylite asbestos detected. That result is encouraging but not conclusive. Additional samples will be needed before the glazing can be classified as an ACM or not. Abatement cost ranges from $1,000-10,000
Plaster walls and ceilings	One sample was collected, and analyzed with no asbestos detected. Also encouraging and expected, as the plaster appears to use horse hair as a binder in lieu of asbestos fibers. Additional samples will be needed before the plaster can be classified as an ACM or not. Also encouraging was that no skim coats or other suspect plaster applications were observed. Abatement cost ranges may likely be zero, however, if ACM was found to be present, costs would be in the range of $10-20,000+ depending on how much would be removed/repaired
Gypsum Board	Observed in limited quantities and unlikely to contain asbestos. Zero cost
Joint Compound	Not observed, but there could be some on the sheetrock. Would be limited quantities. Zero cost up to $2,000
Duct insulation	Limited amount at floor penetration to the basement was observed $200-500 removal cost
Wire insulation	Some suspect insulated wiring observed in the basement. Zero cost up to $3,000
Roofing materials	Mixture of roofing products appear to have been used. Some but most probably not all of it could contain asbestos. Can be removed by non-licensed asbestos trained workers. Access methods and roof condition will make it more difficult. Zero cost up to $5-8,000.
Duct Sealant	None observed
Thermal system insulation	None observed, not expected to find any
Wall coverings	Wall paper remains glued to the plaster walls in various locations. The glue may contain asbestos, but not likely. Zero cost to $3-

Hazardous Material	Notes/Cost ranges
	5,000
Slip sheeting/paper between hardwood floor and subfloor	None observed in a few areas that were checked.
Mastic and flooring materials	Several types observed in several locations. Chances are at least some of it will contain asbestos. $1000-$2,500 removal cost
Ceiling Tile	None observed
Window and/or door caulking	None observed – Based on the age and construction, it does not seem likely that there would be any window caulking present
Misc. ACM materials	Carry contingency for additional/unknowns - $3-5,000
Asbestos survey	Required by EPA NESHAPs. See below for asbestos survey sampling requirements. Cost range $1,500-2,500
Asbestos air samples and final visual inspections	Depends on type/quantity of asbestos and removal procedures. Cost range $1,500-5,000
Estimated Cost range for the above noted Asbestos Issues:	Expect total range of costs related to asbestos to range from $10,000-40,000 Please note that this **excludes** plaster removal costs
Other Issues:	
Lead Paint – MA DPH	Inspection cost range $1,000-2,000. This would be required prior to families with children under the age of 6 moving in. Depending on the results of the inspection, de-leading would likely be required to a certain extent. Costs are hard to predict without an inspection, but could range from $3,000-15,000+
Lead Paint – OSHA requirements	One paint chip sample was collected from the white paint found on the porch. Analysis revealed a result of 0.46 % lead content. That result is encouraging, although the paint is still considered a lead containing paint, as a detectable level of lead was found. Also see below for further notes regarding lead paint in construction. Additional costs to renovations due to the presence of lead paint can add between 5% to 15% to the overall cost of the renovations. Cost range about $2,000-5,000+
Lead Paint in Soil	Peeling lead paint can contaminate soil within a few feet of the building. Depending on plans for those grounds, soil sampling may either be required or prudent. Cost range for removal/disposal of lead contaminated soil could be considerable, $20,000+ for example
Lead waste	The demolition waste stream should be sampled via Lead TCLP to verify that it is not hazardous waste prior to shipment off-site. If enough of the debris is unpainted, chances are that it will pass the TCLP. However, disposal of a 60 cu yd trailer of failed material could be $10,000-20,000+
Microbial (mold)	Additional costs will mostly be when attempting to "clean" mold from impacted surfaces intended to remain. Those additional costs could range from $2,000-15,000.
Other Hazardous materials	Items such as light bulbs/ballasts, mercury switches, coal debris, cans/containers of hazardous liquids/chemicals, coolants etc. would need to be gathered and disposed/recycled. Costs could range from $1,500-5,000
PCB caulking/glazing/sealants	If PCBs are found in building materials, additional testing may be needed to determine if the PCBs have leeched into the substrates.

Hazardous Material	Notes/Cost ranges
	Testing costs alone could range from $1,000-5,000. Removal costs can't be determined at this time, but could be from zero to $50,000+
Phase 1ESA (if required)	If funding is coming from certain outside sources, they may have a requirement to perform a Phase 1 prior to releasing the funding. Typical costs would be $1,500-2,5000 for a Phase 1
Basement soil sampling	Unless there is knowledge of a previous spill or leak of hazardous materials/liquids that would affect the soil in the basement, sampling should not be needed. If renovations call for removing/excavation of soil in the basement, testing may be appropriate.

Lead Paint in Construction - Implications and Regulations

The Occupational Safety and Health Administration (OSHA) does not acknowledge any quantitative threshold for a lead-based paint. Paint with a detectable amount of lead, regardless of the level, is recognized as a lead containing paint. The possible exposure hazard to workers impacting these coasted surfaces should be assessed and contractors and their employees must adhere to OSHA Lead in Construction standard found at 29 CFR 1926.62. Although OSHA does not recognize negative XRF results as proof that paint does not contain lead, the use of XRF is an efficient real time screening technique for identifying lead-containing paints. To comply with OSHA requirements, a negative XRF result would have to be confirmed by other approved methods. Positive XRF results do not need to be confirmed. Regardless of analytical results, OSHA still requires that personal exposure monitoring be conducted when appropriate to determine lead exposure, even for zero results as determined by any method. To fully comply with EPA regulations, sampling of demolition debris waste streams may be required, depending on the requirements of the receiving facility.

OSHA recognizes that construction type work on surfaces coated with lead-containing paint has a **potential** to expose workers to hazardous levels of lead and requires that appropriate safety and health measures be followed as stated in 29 CFR 1926.62. OSHA states that until the employer performs an exposure assessment and documents that employees are not exposed above the permissible exposure limit (PEL) of greater than 50 micrograms per cubic meter ($\mu g/m^3$) of air, the employer must treat employees as if they were exposed above the PEL for the following operations:

- Manual renovation and demolition of structures, manual scraping, manual sanding and use of heat gun where lead-containing coatings or paints are present;
- Abrasive blasting;
- Power tool cleaning;
- Lead burning;
- Using lead-containing mortar or spray painting with lead-containing paint;
- Abrasive blasting, rivet blasting or welding, cutting or burning on any structure where lead-containing coatings or paint are present;
- Cleanup activities where dry expendable abrasives are used; and
- Any other task the employer believes may cause an excess of the PEL.

Work precautions include providing respiratory protection, protective work clothing and equipment, change areas, hand washing facilities, biological monitoring and training until an exposure assessment has

determined that the work activity will result in an exposure below the PEL. Additional requirements under this standard include a written compliance program as well as record keeping.

ASBESTOS CONTAINING MATERIALS SURVEY

Sampling Methodology

The survey would be performed by EPA-accredited and Massachusetts DLS certified Asbestos Inspector. Bulk samples, representing individual homogenous areas of suspect materials, need to be collected in a randomly distributed manner, in accordance with the methods outlined below.

Building materials exist in the form of thermal systems insulation (TSI), surfacing materials and miscellaneous materials.

The following generally illustrates the sampling strategy employed by ATC per regulation and where feasible:

(a) Surfacing materials – In a randomly distributed manner, collect bulk samples of surfacing materials, representative of each homogeneous area, and not assumed to be ACM.

- (1) Collect at least three bulk samples from each homogeneous area that is less than or equal to 1,000 ft^2.
- (2) Collect at least five bulk samples from each homogeneous area that is greater than 1,000 ft^2, but less than or equal to 5,000 ft^2.
- (3) Collect at least seven bulk samples from each homogeneous area that is greater than 5,000 ft^2.

(b) Thermal systems insulation- In a randomly distributed manner, collect at a minimum, three bulk samples of thermal systems insulation material, representative of each homogeneous area, and not assumed to be ACM.

- (1) Collect, at a minimum, one bulk sample of patched thermal systems insulation, representative of each homogeneous area, and not assumed to be ACM, providing the section of patch was less than 6 linear or square feet.
- (2) Collect, at a minimum, three representative bulk samples of each insulated mechanical system not assumed to be ACM, including, but not limited to cementitious material used on pipe fittings such as tees, elbows or valves. Representative sampling was conducted in a manner sufficient as to identify whether each homogeneous area is either asbestos or non-asbestos containing.
- (3) Bulk samples are not required to be collected from any homogeneous area where the accredited asbestos inspector has determined that the thermal systems insulation is a non-suspect material (i.e. fiberglass, foam glass, rubber or any other non-ACM).

(c) Miscellaneous materials – Collect, at a minimum, two representative bulk samples of each miscellaneous material not assumed to be ACM, including but not limited to ceiling tiles, floor tiles, associated floor mastic, etc. Representative sampling must be conducted in a manner sufficient as to identify whether each homogeneous area is either asbestos or non-asbestos containing.

ProScience Analytical Services, Inc

Lorri Brown
ATC Associates, Inc., Woburn
600 West Cummings Park
Suite 5450
Woburn, MA 01801

June 04, 2012

Dear Lorri Brown,

The enclosed analytical results have been obtained by using the EPA/600/R-93/116 method. The "Visual Estimate" quantitative method is generally used for determining the percentage of asbestos and other components of the sample. "The Point Counting" method may also be used upon client request or at the analyst discretion. The Point Count method is usually recommended when the sample contains less than 10% asbestos by Visual estimate. Asbestos content less than 1% is recorded on the report as TR (trace).

The Quality Control data related to the samples analyzed is available upon client's written request. ProScience Analytical Services Inc., assumes no responsibility for potential sample contamination that may have occurred during the sample collection process or erroneous data provided by the client.

The enclosed results may not be used under any circumstances as product endorsement by any US government agency including NIST/NVLAP.

All Laboratory records are retained for at least three years unless otherwise directed in writing by the client. The actual samples are retained for a period of two months and written request is necessary in order to be retained for a longer period of time. All analytical results and records are considered strictly confidential and will not be released under any circumstances to anyone except the actual client. The analytical results included in this report apply only to the items tested.

If you have any questions please contact the Laboratory Manager or the Laboratory Director.

Sincerely,

Stefanie Bishop

Stefanie Bishop, Optical Asbestos Manager

Aimee Cormier, Laboratory Director

Enclosure: Version 2
LAB BATCH ID: B 81523 CLIENT PROJECT ID: N/A
Client Ref: 29 Manomet Pt. Rd., Plymouth, MA - Simes House
AIHA ID# 102754; CT ID# PH-0209; MA ID# AA000156; ME ID# LB-055; ME ID# LA-056; NVLAP Lab Code 200090-0; RI ID # AAL-093; VT ID# AL016876

ProScience Analytical Services, Inc.

Client Name:	ATC Associates, Inc., Woburn	**Batch:**	**B81523**
PO #:	N/A	Date Sampled:	N/A
Client Project #:	N/A	Date Received:	6/1/2012
Client Reference:	29 Manomet Pt. Rd., Plymouth, MA - Simes House	Date Analyzed:	6/4/2012
Method:	EPA/600/R-93/116	Date of Report:	6/4/2012

		Asbestos %						Non-Asbestos %						
Sample ID	Color	CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
01	Gray	0	0	0	0	0	TR	0	0	TR	0	0	2	98

Description: Window glazing
Location: Simes House
Comments: Recommend TEM Analysis

Is asbestos present? Yes. Analyzed: Yes

		Asbestos %						Non-Asbestos %						
Sample ID	Color	CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
02	Gray	0	0	0	0	0	0	0	0	5	0	0	0	95

Description: Wall plaster
Location: Simes House
Comments:

Is asbestos present? No. Analyzed: Yes

Asbestos Codes: CHR = Chrysotile AMO = Amosite CRO = Crocidolite ACT = Actinolite TRE = Tremolite ANT = Anthophyllite
Non-Asbestos Codes: FBG = Fiberglass MNW = Mineral Wool CEL = Cellulose HAR = Hair SYN = Synthetic OTH = Other NON = Non-Fibrous Minerals

Note: To create a unique lab sample ID, use the Batch # and the Sample ID (example: [Batch #] - [Sample ID]).

* All results are in percentage.

Analyst: Stefanie Bishop

ProScience Analytical Services, Inc.

PLM Asbestos Chain of Custody Record

LABORATORY/HEADQUARTERS
22 Cummings Park, Woburn, MA 01801
T:781-935-3212 F:781-932-4857

www.proscience.net
general@proscience.net

☐ RUSH

Turn Around Time Requested

☐ Same day ☑ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 5 Days

Client: ATC Associates
Address: 600 West Cummings Park - Suite 5500, Woburn, MA 01801 Simes House
Project Site & Number: 29 Manomet Pt Rd, Plymouth, MA
Phone / FAX Number: 781-932-9400 Fax: 6211
Contact: Doug Ryder

Relinquished by/date: Doug Ryder 6/1/12
Received by/date: Kathy Altone 6-1-12 12:20pm
Samples received: 2 Analyzed:
Faxed, E-mailed, Verbal by/date: 6.4
Stop on first positive: Yes No

For Lab Use> Batch Number B81523 Analyzed by/date: QC by/date:

Lab ID	Field ID Sampled date	Description / Location	% Asbestos	Stereo Scope: Color	Homogeneity	Texture	Friable	Optical Properties: Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	⊥	Asbestos Percentage (%): Chrysotile	Amosite	Circle Type: Crocidolite	Tremolite	Anthophylite	Actinolite	Non Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non Fibrous
	01	Window glazing, Simes House Rec Fem	ND	Gray				SP	Y	M	1.62	1.68							TR				TR			2	98
	02	Wall Plaster ↓	ND	Gray																				5			95

Comments: Birefringence L= less than .010, M= .011-.029, H= greater than .03: Microscope Olympus BH-2, Serial # circle 1- 242277, 229027, 235000, 230663 Laboratory uses the EPA or ELAP point count method as appropriate

For complete information about our services and locations please visit us at www.proscience.net or call the numbers above.

Revised on 4/7/09

ProScience Analytical Services, Inc.
22 Cummings Park, Woburn, MA 01801

Telephone: 781-935-3212
Facsimile: 781-932-4857
Email: chemistry@proscience.net

Laboratory Report

Contact: Lorri Brown
Client: ATC Associates Inc.
Address: 600 W. Cummings Pk , Suite 5500
Woburn, MA 01801

Batch #: C 270488
Date received: 6/1/2012
Date analyzed: 6/1/2012
Date of report: 6/1/2012

Project # N/A
P.O.# N/A
Project Site: Simes House - 29 Manomet Pt. Rd
Plymouth, MA

AIHA-LAP, LLC Lab ID 102754

Lead Analysis In Paint Using SOP Based on SW846-7420/3051
Results in weight percent on an "as received" weight basis

Lab ID	Client ID	Sample date	Description	Result	Reporting Limit	Comments
C 432308	Pc-01	6/1/12	White Paint Porch Exterior	0.46	0.013	

Simona Peavey, Tech. Manager Chemistry
Aimee Cormier, Lab Director

Unless otherwise indicated, all samples were received in acceptable condition.
All result apply only to the samples as received and are accurate to no more than two significant figures.
Unless otherwise indicated, all the quality control criteria for the method above have been met.
RL-Reporting Limit(%by weight) Note on units: mg/Kg is the same as ppm by weight.

ProScience Analytical Services, Inc.
Chemistry Chain of Custody Record

LABORATORY/HEADQUARTERS
22 Cummings Park, Woburn, MA 01801
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general@proscience.net

Turn Around Time Requested: [ ] Rush/<6 Hours [ ] Same Day [✓] Next Day [ ] 2 Day [ ] 3 Day [ ] 5 Days

Client: ATC Associates Inc.
Address — Street: 608 W. Cummings Pk
Town: Woburn, MA — State/Zip: 01801
Project Site — Line 1: Simes House
Line 2: 29 Manomet Pt Rd, Plymouth MA
Project Number:
PO:
Contact: Doug Rader
Phone:
FAX:
Alt/Pager:

[ ] NELAC analysis

TYPE OF ANALYSIS (circle)

DUST WIPES	PAINT (0.1 g)	SOIL (1 g)
AIR	TSP	TCLP (100g)
(min)	PM10	Other

Please use a separate form for each matrix.

Paint Chip

Element: Pb Cd Cr As Se Ag Ba Fe — gravimetric

Other (please specify under Comments)

[ ] QC

For Laboratory Use
BATCH NUMBER: C270488

[ ] ASTM E1792

FOR LABORATORY USE ONLY

Date and Time Sampled	Field I.D.	Sample Description/Location	Air Sampling Information: Start Time	End Time	Start Flowrate	End Flowrate	Volume (liters)	Wiped area: length (inch)	width (inch)	Area (sq in)	ANALYSIS: Weight (grams)	Dil'n	AA/ ICP Reading	RESULT	Lab I.D.
6/1/12	PC01	White paint, Porch Exterior													432308

Relinquished By: Doug Rader — Date: 6-1-12 — Time: Noon
Received By: [signature] — Date: 6-1-12 — Time: 12:05

Comments: please email result: doug.rader@atcassociates.com

ver 5.3

PAGE 1 OF 1

Field blanks are required for airs and wipes per the sampling method.
Proscience Analytical Services reserves the right to subcontract samples to an appropriately accredited laboratory when we are unable to perform the analysis in house.

MHC Reconnaissance Survey Town Report

PLYMOUTH

Report Date: 1981

Associated Regional Report: Southeast Massachusetts

Reconnaissance Survey Town Reports, produced for MHC's Statewide Reconnaissance Survey between 1979 and 1987, introduce the historical development of each of the Commonwealth's municipalities. Each report begins with an historic overview, a description of topography, and political boundaries. For the purposes of the survey, the historic period has been subdivided into seven periods: Contact (1500–1620), Plantation (1620–1675), Colonial (1675–1775), Federal (1775–1830), Early Industrial (1830-1870), Late Industrial (1870–1915), and Early Modern (1915–1940/55). Each report concludes with survey observations that evaluate the town's existing historic properties inventory and highlight significant historic buildings, settlement patterns, and present threats to these resources. A bibliography lists key secondary resources.

Town reports are designed for use together with a series of town maps that demarcate settlement patterns, transportation corridors and industrial sites for each historic period. These maps are in the form of color-coded, polyester overlays to the USGS topographic base map for each town on file and available for consultation at MHC. For further information on the organization and preparation of town reports, readers should contact MHC.

Users should keep in mind that these reports are now two decades or more old. The information they contain, including assessments of existing knowledge, planning recommendations, understanding of local development, and bibliographic references all date to the time they were written. In some cases, information on certain topics was not completed. No attempt has been made to update this information.

Electronic text was not available for digital capture, and as a result most of the reports have been scanned as PDF files. While all have been processed with optical character recognition, there will inevitably be some character recognition errors.

The activity that is the subject of the MHC Reconnaissance Survey Town Report has been financed in part with Federal funds from the National Park Service, U.S. Department of the Interior. However, the contents and opinions do not necessarily reflect the views or policies of the Department of the Interior. This program receives Federal financial assistance for identification and protection of historic properties. Under Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, as amended, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, disability or age in its federally assisted programs. If you believe you have been discriminated against in any program, activity or facility as described above, or if you desire further information please write to: Office of Equal Opportunity, National Park Service, 1849 C Street, N.W., Washington, D.C., 20240.

MASSACHUSETTS HISTORICAL COMMISSION
William Francis Galvin, Secretary of the Commonwealth
Chair, Massachusetts Historical Commission
220 Morrissey Blvd.
Boston, MA 02125
www.sec.state.ma.us/mhc
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MHC RECONNAISSANCE SURVEY REPORT

DATE: [illegible] Community: Plymouth

I TOPOGRAPHY

Located on Coastal Lowlands on Plymouth Bay and on Cape Cod Bay. Plymouth Harbor shallow with shifting sand bars. Complex topographical relief along the coast. Sandy and gravelly soils with underlying glacial till. Extensive pond system throughout the town. Drainage via Town Brook and Eel River in the north. Agawam River and Beaverdam and Indian Brooks in the south.

II POLITICAL BOUNDARIES

The town of Plymouth was founded in 1620, it was never incorporated. Part established as Plympton in 1707, North Precinct established as Kingston in 1726. Plantation of Agawam included in Wareham in 1739. Part ceded to Wareham in 1827.

III HISTORIC OVERVIEW

Plymouth is the oldest town in Massachusetts; it is the location of the first settlement in the Commonwealth. Plymouth is the seat of Plymouth County and served as the governmental center of Plymouth County until its merger with the Massachusetts Bay Colony in 1695. Mid 18th century settlement nodes were established at Plymouth center, Manomet Ponds, and Eel River (Chiltonville). Late 18th and early 19th century industrial development at Chiltonville and North Plymouth provided impetus for the growth of settlement at these areas. The principle economic activities were fishing, whaling, also mills (grist, rolling, etc.) on Town Brook westward to Billington Sea, at Chiltonville (Eel River), which were centers of 18th century industrial development. Gradual movement of residential settlement southward

along Sandwich Street to Chiltonville. Prior to construction of of Old Colony Railroad principle connection with the rest of the Commonwealth were the packet boats which ran regularly between Boston and Plymouth. Appears to have been little dependence on the Bay Path (Massachusetts Path) for communication although a regular stage run between Boston and Plymouth was in operation early on. Construction of Pilgrim Hall in 1824, by Pilgrim Society - early museum devoted to Pilgrim possessions begins physical recognition of historic role of the town. Top half of forefathers' rock (Plymouth Rock) moved to front of Pilgrim Hall in 1834. Economy of the town during this period (early - mid 19th century) dependent on fishing and various mills and ropewalks as well as some trade. Settlement remains along coastal areas, although there was some development at Darby, impetus presumably provided by the railroad. Summer resort development on Plymouth beach established mid-late 19th century - destroyed by the storm of '98. Portugese community well established in North Plymouth in 1880. According to some sources Italian and Portugese took over abandoned farms, others indicate they worked for Plymouth Cordage. Indications that Portugese were from Provincetown and New Bedford and originally from Cape Verde. Late 19th and early 20th century development continues at industrial node at North Plymouth, resort node established in 1889. Cranberry growers begin to have impact by turn of the century. Tercentenary in 1920 major impetus in adaptation of waterfront from commercial to tourist usage with demolition of wharves, placement of Plymouth Rock in tidal area, and creation of waterfront park.

It appears that the banks of Town Brook from Bridge at Sandwich St. landscaped to Park at this time. Waterfront south of Town Brook retains some wharf development. Post World War II development spurred by construction of Southeast expressway. Substantial new development at Manomet and southward along coast and interior. Miles Standish State Forest and Plymouth Town Forest have protected large portions of the interior from the residential development which has made Plymouth the fastest growing town in the Commonwealth during the past 15 years.

IV CONTACT PERIOD (1500 - 1620)

A) Transporation Routes:

Located on Plymouth Bay with focus of regional corridors from Cape Cod, Buzzards Bay, and interior ponds. Primary trail north to Pembroke Ponds and Jones River apparently documented as Court Street (Route 3A) from Plymouth center (Davis, 1883, p.156). Main trail west to Nemasket (Middleborough) follows axis of Summer St./Hurd (Davis, 1884, p.78) along Town Brook with branching of routes around Billington Sea likely as Plympton Road with original trail apparently intact around Narragansett Ride (Narragansett Pond) and Furnance Road past Ellis Pond. Main route south to Great South Pond and Carver ponds from ford at Town Brook documented as South Pond Road (Hurd - Davis - 1884, p. 135). Several routes probable south to Buzzards Bay and Cape Cod from low tide ford at Town Brook (Hurd, 1884, p. 135) including Long Pond Rd. to Great Herring Pond, with branch south to Big Sandy Pond likely as Duck Pond-White Island Pond Roads, Sandwich Street, Old Sandwich Road to Savery

Pond in Ellisville, and south to Cape Cod as Ellisville Road with probable loop to Manomet coast from Eel River as River Street (Route 3A) over Pine Hills to Fresh Pond and south to Savery Pond (Ellisville) along Shallow Pond-Indian River road (unmarked) including likely branches to Manmoet Heights fishing areas along Brook St. South Plymouth district possibly retains several trail remnants in complex network of surviving paths around Miles Standish State Forest. Precise trail location in Plymouth town center is still open to question.

B) Settlement Pattern:

No reported contact period native sites. Nine sites with Woodland late Woodland components recorded (MHC survey). Coastal focus, seven sites located on or within short distance of Plymouth shore. Concentrated on northern bank of Town Brook/Arms House Pond, Eel River, Bartlett Pond), Billington Sea were habitation/planting grounds noted by early 17th century explorers. Coastal proximity provides access to varied marine resource base, prime planting grounds, transporation routes. Two inland woodland/historic sites situated on northern shore Bloody Pond, western shore Great Herring Pond. Latter site is prehistoric/Christian cemetery. Three unidentified native, burial sites vicinity of Plymouth Country Club, midway between No Bottom Pond and County Farm. Pring after visiting the Plymouth area in 1603 estimated there were approximately 200 native residents (probably only entailed coastal population since he undertook little interior investigation).

C) Subsistence Pattern:

Extensive woodlands, freshwater, marine resources capable of supporting substantial native population. Undertook seasonal horticulture, fishing, hunting, collecting. Early 17th century explorers

and settlers reported abandoned native planting grounds concentrated along Plymouth shore, Town Brook, Eel River, Watson's Hill. Rocky, sandy interior probably discouraged interior horticulture. Crops included dorn, pumpkins, cucumbers, tobacco. Large quantities fresh-water fish available in numerous coastal and inland streams and ponds. Native offshore fishing (Plymouth Harbor, Plymouth Bay) noted by Champlain in 1605. Plymouth shore, tidal flats rich sources of shellfish and water fowl. Interior woodlands excellent habitat for large game. High probability European-Indian trade predating early 17th century European-Indian trade predating early 17th century European-Indian intercourse due to extensive coast, protected harbor.

D) Observations:

Probable major native settlement area (southeastern Massachusetts due to environmental diversity, coastal accessibility. Settlement concentrated on Plymouth coast, shores of major water sources (i.e., Town Brook, Eel River, Billington Sea, Great South Pond, Long and Halfway Ponds, Little and Great Herring Ponds). Heavy coastal development (17th-20th century), shore erosion particularly area from North Plymouth to Eel River, minimizes chances of surviving native contact sites. Likely inland contact period sites remain due to minimal interior development.

V. FIRST SETTLEMENT PERIOD (1620-1676)

A) Transportation Routes:

Native trails improved as regional highways with Massachusetts Bay path as Main-Court St. (Route 3A), Middleborough path as Summer St. and Sandwich (Cape Cod) as Old Sandwich Road. Original New Plymouth town plan includes Leyden Street (1620) as "the Great

Street" (Davis, 1883, p. 156) across the coastal Native path around Coles Hill. Town River ford improved with swing bridge (1666) (Davis, 1884, p. 158). Other town streets laid out during 17th century include Market, Summer, Spring and Samoset Sts., although complete sequence remains unclear.

B) Population:

No native population figures, although believed 1616-1619 epidemic virtually wiped out Plymouth natives. White population well documented. Initial settlement (1620) 102 residents, 51 died first winter (starvation, disease, exposure). 1621 - 34 arrivals (London), 1623 - 84 arrivals. 1624 - 180 residents, 32 dwellings. 1634 - 20 deaths (epidemic). 1640 150 residents. Population loss due to emigration, establishment of new settlements (e.g., Duxbury, Eastham, Marshfield, Scituate), better farmland. Original settlers primarily from Lincolnshire, Nottinghamshire, Yorkshire.

C) Settlement Pattern:

Minimal native presence, first settlers reported abandoned planting grounds, settlement area, unburied dead on Plymouth coast. Surviving native population probably congregated around major inland freshwater sources (i.e., Billington Sea, Great South Pond, Boot Pond, Little Long Pond, Long Pond, Halfway Pond) with English arrival, displacement from coastal settlement sites. Major native settlement southwest (Assawompset, Long, Great Quittecas Ponds - Wampanoag?), South (Cape Cod-Nauset) of Plymouth. Clark's Island reputedly temporarily occupied by first settlers prior to Plymouth settlement (Thacher 1972: 153). First settlement on Leyden Street, concentrated for definsive purposes-surrounded by wooden stockage. First permanent house (1621) situated

on north side of Leyden St. just above Carver/Leyden St. junction. Town Squate (Church, Spring, Old Town House, Market Sts.) and Burial Hill civic/military center. Fort/meetinghouse erected c. 1621 on southeast corner of Burial Hill (1640+town burying ground). Replaced by c. 1638 meetinghouse Town Sq. c. 1670 Court House built on approximate site of extant 1749 Court House (addition to "Country House"). Cole's Hill burial site of first winter's dead. Early expansion (1620s) of primary node along Court/Main St., Town Brook, Establishment of secondary settlement node on Eel River - Richard Sparrow House (c. 1640), Summer St.; Jabez Howland House (c. 1666), corner Sandwich/Summer Sts. Primary settlement area throughout period-site of Plymouth's best crop, grazing land, marine resources, shipping harbor, protection from inland natives. 1640+ dispersed inland settlement, particularly along Middleboro Rd., Jones River (Kingston, Plympton), South Meadow Brook (Carver) - extensive meadowlands. Limited expansion due to hilliness, poor soil of interior. Fear of indian attack.

D) Economic Base:

Continued native focus on seasonal subsistence rounds - fishing, hunting, collecting. Concentration of English settlement on coast, however, disrupts native harvesting of marine resources (i.e., shellfish, fish, water fowl), utilization of planting grounds. Probably results in increased inland orientation - freshwater ponds, streams, woodland resources. Little, if any, horticulture because of poor quality of interior soil. Increased importance of Anglo-Indian trade - growing English fur market, decreased native self sufficiency.

Fishing, Anglo-Indian fur trade, timbering, export/import trade established early as primary English commercial activities. Interior

ponds, streams rich sources fish. Shellfish collection on tidal flats, offshore fishing in Plymouth Harbor, Massachusetts and Cape Cod Bays. Fur trading posts established in Manomet (Borne, 1627), Hartford, Conn. (1633), Penobscot ( ) and Kennebec Rivers (1620s) (1638) Post-1638 fur trade decline with development of Mass Bay, French capture of Penobscot post, economic difficulties of Kennebec post. Early export/import trade (1620's) with England - fish, fur, timber for manufactured goods, livestock. Post-1630 focus on Mass Bay-raw materials for manufactured goods. Limited agriculture - Plymouth coast, banks of Town Brook, Eel River. Commerical/industrial district confined to town center. S. Deane ponding mill (corn, 1632) corner of Spring Lane/Summer St., Jenney grist mill (c. 1636) immediately south of Deane mill. Fulling mill (1672) on northern bank of Town Bank slightly east of Town Brook. Brick production (beginning c. 1643) on land just below Pilgrim Hall. Salt and smallscale ship production on Clark's Island (1641).

E. Architecture:

Although no structures of the First Settlement period are known to survive, structures of the earliest settlement at Plymouth have been investigated by archaeologists and some evidence is posited for post-hole houses; these were shortly replaced by modest cottages with end-wall chimneys of clay and wood, with chimneys of brick presumably appearing in the 1630s. Half-plan cottages probably remained the standard through the end of the First Settlement period. The Sparrow House (c. 1640), air end chimney, two-story house on Summer Street is the earliest known house standing in town.

The first meetinghouse was constructed in 1622 and combined ecclesiastical, civic and military functions.

E) Observations:

Highly nucleated community, limited primarily to Plymouth coast. Town center served as multi-purpose (residential, commercial, industrial, civic) district. Community initially highly dependent on England, outlying communities, natives for food, manufactured products, livestock. Relatively self sufficient by 1630. Community development, however, overshadowed and stifled and by rapidly expanding Boston.

VI COLONIAL PERIOD (1676-1776)

A) Transportation Routes:

Highways remain from 17th century with addition of streets in town center as Water, Middle and portions of Court St. during early 18th century (Davis, 1884, p. 156-58). Regional highways maintained from First Period with improvement of local roads to Halfway Pond area including Mast Rd. to Halfway Pond, Bourne Rd to Big Sandy Pond Halfway Pond Road to Long Pond and Beaver Dam Rd/White Horse Rd. to Manomet meeting house (1727) around Pine Hills. Other roads include South and Middleborough Rds from Summer St. axis.

B) Population:

Small native population, no figures available. Rapid growth of white population. 1676 - 600 residents, sheltered population of Middleboro, other surrounding communities during King Philip's War. By 1698, 40% population increase to 1000 residents. 1765 - 2177 residents, 1776 - 2655 residents. Influx of small Arcadian population in late 1750's.

C) Settlement Pattern:

Native settlement area unclear, probably continued focus on interior - freshwater ponds, streams. As late as c. 1832 native residents on shores of Great Herring Pond (Thacher 1832: 321). Conflicting reports on King Philip's War damage - one source claims the destruction of 1 home (Wm. Clark Garrison House), 11 deaths on Eel River (Thacher 1972: 387). Second source reports the loss of 18 homes, 7 barns (Baylies 1866: 122). Apparently minimal impact on community's post-war growth. Infill and expansion of town center along and west of Court/Main/Sandwich Sts. and Town Brook. Town Sq. remains civic/religious/military center. New church erected in 1683 at the head of Town Sq. (vicinity of present First Church), larger structure replaced this church in 1744/5. New county courthouse built on site of previous courthouse in 1749 (Old Town House St.). Burial Hill site of 1676 pallisaded fortification (100' sq.), 1744 defensive earthenworks. Late 17th, early 18th settlement expansion north, west, south of Plymouth center with elimination of Indian threat, desire for suitable farmland. 1695 establishment of West Precinct (Plympton, settlement focus junction of Palmer/Main Sts. 1717 establishment of Jones River Parish (Kingston), primary settlement node contained within Green, Summer, Main Sts. Secondary settlement node junction of Manomet/White Horse Rds. (Plymouth) in early 18th century-meetinghouse built c. 1738.

D) Economic Base:

Native economic activities unclear due to scarcity of documentation. Probably increasingly sedentary lifestyle as available native lands continue to shrink in size. Turn to non-traditional occupations - servants or laborers in white households, whaling, commercial crafts production.

Continued English emphasis on marine based economic activities. Expansion of offshore fishing fleet - 1774, 75 vessels averaging 45-50 tons/vessel. Limited whaling. Probable continuation of shellfish industry, unsuccessful (1711) attempt to establish an oyster bed in Plymouth Harbor. Maintenance of export/import trade - pre-Revolution trade with the Carolinas, Virginia, Jamaica, Martinique, Guadalupe, Mediterranean, England. Probably New England coasting trade (i.e., Boston, outlying Bay communities). Development of wharf complex immediately to the north of the Town Brook in late 17th, 1st half of 18th century to accomodate shipping. First documented wharf (1698) at foot of Cole's Hill. Timbering continued as major activity - harvest interior woodlands, extraction of pine pitch from trees in town common, Jones and Blackwater Rivers, Duxbury bounds in early 18th century. Agricultural emphasis on livestock production - cattle kept on Clark's Island in late 17th century. Industry remains secondary activity, confined to town center. Fulling and Jenney grist mills (see preceding period) continue to operate in late 17th, 18th century. Establishment of "leather mill" prior to 1777 on Town Brook. Two blacksmith shops adjacent to 1670 courthouse, corner of Leyden/Main Sts. in early 18th century (possibly c. 1660's establishment).

E) Architecture:

Residential: The earliest known houses surviving in Plymouth are Late First Period end-chimney, half-plan cottages dating from the 1670s and '80s, a group of which stand on Sandwich Street at Jabex Corner south of the town center. By the turn of the 17th century three-quarter plan and center-chimney cottages with full five-bay facades were being constructed. At least one three-quarter plan two-story house with an end-wall overhang and pilastered chimney is known

to survive on Sandwich Street. Gambrel-roofed center-chimney two-story houses are known as early as the 1730s, but the more modest remained the most prevalent house form of the 18th century with full five-bay cottages and half-plan, end chimney cottages built in almost equal numbers. Although fewer of these have survived, three-quarter plan (four-bay) cottages provided an intermediate alternative. Most Colonial period cottages are dispersed from the town center along Sandwich and Court Streets. In addition to the cottages, at least a half-dozen more ambitious two-story houses with double interior end chimneys were built at the town center, along Leyden and Summer Streets with a similar number of two-story, center-chimney houses surviving across the town. Also surviving at the town center are several sidehall-plan two-story houses with end-wall chimneys. These appear to date from the mid-18th century indicate in their urban, sidehall plan the densely settled character of the town center in the Colonial Period.

Institutional: Meetinghouses of the First Parish were constructed in 1683 and 1744; the 1683 meetinghouse was roughly swuare (45' x 40' x 16'), had a cupola and bell and was unceiled on the interior in what was described as a "Gothic" roof (Davis: 1883). This was replaced in 1744; both were located on the original meetinghouse site at the summit of Leyden Street. In 1731, a second parish was established at Monomet Ponds and a meetinghouse constructed at the intersection of White Horse Road and Route 3A. Schools were kept at Plymouth from 1635 on, with the first free public school endowed in 1672, but a schoolhouse was not built until 1705; this stood south of the First Parish meetinghouse on Leyden Street. In 1747, three more schools were constructed, at the Center, at Eel River and at Manomet

Ponds. In 1765, a Grammar School was built north of the First Parish at the center. A fire department was established in Plymouth in 1727 with five fire wards organized in 1752. The only institutional structure known to survive from the colonial period is the Plymouth County Courthouse (1747), a simply-detailed two-story, gable-roofed structure, three bays' wide by five bay's long with a center entrance, located on street.

F. Observations:

Community settlement and economic development continues to occur primarily on coast, on ar adjacent to town center. Rugged, rocky interior discourages extensive interior settlement. Inland settlement focused on less forbidding land south and west of present Plymouth. Despite expansion of marine and livestock activities, Plymouth is increasingly overshadowed by rapidly growing Boston. Culminates with elimination of Plymouth Colony and Plymouth's annexation as part of the province of Massachusetts in 1692.

VII FEDERAL PERIOD (1776-1830)

A) Transportation Routes:

Continued expansion of urban street grid in Plymouth center with High St (1798) and rebuilding of bridges over Town Brook (Davis, 1884, p. 158). No apparent improvement of regional routes through area.

B) Population (1775-1830)

Indication of slow steady population growth with some out-migration during this period. Universalist Society formed in Plymouth town center 1822, Christian Society Church 1827, Baptist Church on Spring St. 1822, Robinson Church 1822, Third Congregational Church (Church of the Pilgrimage) 1801. Fourth Congretational Church at Eel River (Chiltonville) organized 1814.

C) Settlement (1775-1830):

Indications of farming settlements at Cedarville, Ellisville, Vallerville and Wellingsley as well as mixed farming and industrial activity at Manomet, Chiltonville and at Plymouth Center. Establishment of Plymouth Cordage Co. at North Plymouth marks beginning of growth of that area. Small black community (4 families) established on Pertingway's (now Plympton Rd) near Kingston border with grant to returning Revolutionary war veterans.

D) Economic Base:

In the Federal and Early Industrial periods, Plymouth became a major industrial center employing nearly 300 people in land-based manufactures --- nails, cotton, and cordage --- in addition to an already thriving commerce in shipbuilding and fisheries. Much of this activity owed its inception tothe Embargo and the War of 1812, though Nathaniel Russell's entrance into nail manufacture pre-dates the trade restrictions. Russell, key to much of the Federal and Early Industrial development, constructed two furances (including one for converting bar iron to blister steel) on Town Brook in 1807 and extensive nail works, based on the machinery of an East Bridgewater man, Samuel Rogers. In 1827 the company expanded with a large and "modern" rolling mill on Russell Millpond. By 1832 the company had an annual product of over $212,000 and employed 60 men.

In the rush to textile manufacture initiated by the Embargo, Russell also incorporated the Plymouth Cotton Co., 1809, which, in 1813, after a fire the preceeding year, constructed a brick mill -- probably the one yet standing on Town Brook. The Company was followed in 1813 by incorporation of the Plymouth Woolen and Cotton Factory Co., which built a mill on Eel

By the end of the period, two other small mills had also been constructed, and total employment in textile manufacture amounted to over 100 men and women.

Also by 1815, Ames had begun manufacturing shovels at a Town Brook Site though he subsequently moved to Easton.

The largest employer at the end of the Federal period were the rope-walks, which by 1832 employed 110 men. Earliest 19th century firm, built along Town Brook by Robbins Cordage Co., 1817. Second, Plymouth Cordage, built 1824 by Bourne Spooner with incentive of 1824 protective tariff.

One of the region's earliest water systems, Plymouth Aqueduct Co., incorporated 1797 by Nathaniel Russell, Joshua Thomas, et al., contemporaneous with Boston's Jamaica Plain Aqueduct (and said to have been designed by the same Caleb Leach), supplied water from Billington Sea to small group of subscribers north of Town Brook.

E. Architecture:

Residential: Cottages continued to be the predominant house form of the period with many well-preserved examples surviving, especially in out-lying areas such as Ellisville and Chiltonville and away from the town center on Court, Summer, Sandwich, Streets. Center-chimney cottages were built through the turn of the century, as were the smaller and more modest three-quarter and half-plan cottages, but cottages with double interior end chimneys were also constructed in some numbers along with at least a few double cottages. Concentrations of sidehall-plan double cottages as well as story-and-a-half, sidehall-land rowhouse workers' cottages of up to a half-dozen units were built at North Plymouth for workers in the cordage industry established therein the period. At the center of town, at least one outstanding, highstyle brick Federal house, three stories tall with an octagonal cupola, elliptical portico and splayed lintels with

keystones, was built, in 1803. This house was an exception, however, other houses of the period being more modest hop or gable-roofed end-chimney types. Brick end-wall chimney, sidehall houses were built at the town center as late as 1788, reflecting the continued density of settlement there.

Institutional: Several important institutional structures were built in the Federal period, including Pilgrim Hall (Alexander Parris, 1824), a two-story, granite Greek Revival building with a monumental Doric portico, one of the country's earliest museums. Other institutional buildings of the period are the second Plymouth County Courthouse (1820), a two-story, hip-roofed brick building with a cupola and double entrances, successively remodelled with Itanlanate (1857(and Colonial Revival (1881) detailing; and the Second Church of Plymouth (1923), at Manomet a two-story, gable-roofed church with an open octagonal belfry. Schools were established at Halfway and South Ponds in 1798. Plymouth emerges as an innovation center in the Federal period with a girls' Grammar School established in 1793 and a High School founded as early as 1826.

Industrial: Educational innovation in Federal period Plymouth is paralleled by progressive engineering in the same period as a Water Works was constructed in 1796 from Town Brook with reservoirs built in 1829 at Town and North Squares. The only known extant industrial structure of the period is the Plymouth Cotton Company mill (1803) on South Pond Road; a two-story, six-bay brick structure originally topped with a gabled clerestory, the mill is currently in severely-deteriorated condition.

VIII EARLY INDUSTRIAL PERIOD (1830-1870)

A. Transportation Routes:

Further expansion of urban street grid in Plymouth center with pallalel set of Standish and Allerton Sts along primary coastal highway (Route 3A).

Railroad to Boston financed from Plymouth as Old Colony (1845) with route north from town center along shore of Plymouth Bay (Harlow, 1946, pp. 215-17).

B) Population (1830-1870)

Steady increase in population (4758 in 1830 to 6238 in 1870). Methodist Episcopal Society organized 1842 in town center. African Methodist Society organized 1866 near Plymouth Mills. Large influx of foreign born evident from 1855 census, primarily Irish, German and Canadian. Robinson Congregational Church split from 3rd Congregational 1830. Christian Society Church at Chiltonville 1840. Christ's Church on Russell St. 1844.

C) Settlement (1830-1870)

Continued residential growth at existing settlement nodes along coast particularly at Manomet. Within Plymouth center growth occurred on the south side of the original Pilgrim town, that which occurs near the shore primarily workingman's housing, hills reserved for mercantile housing. Continuation of growth at North Plymouth. Black settlement (New Guinea) on Middleboro road near Kingston. Expansion of settlement at Darby (West Plymouth).

D) Economic Base:

Maturing of nail and iron industries responsible for, and characterized by, a developing class of mechanics skilled in machine manufacture. This group included two nail machine inventors, Joseph Lucas and David Bradford, and in 1837, Oliver Edes, an inventor from Needham, whose rivet machine is said to have "revolutionized" the rivet business, with a product hitherto imported largely imported from Europe. Edes went on to specialize in zinc manufacture, setting up on Forge Pond one of the earliest zinc rolling

mills c. 1950, while former partner, Ferris, established Plymouth Mills, a key producter of tacks, nails, and rivets on a series of adjacent Town Brook sites.

By 1845 there were five cotton mills (though doing little business that year), much of the product evidently going into cotton sail duck. Five cordage works produced over $200,000 worth of rope and twine, much of it probably the new manila rope. Though shipbuilding itself declined, 1845 saw the peak census year for cod and mackerel fishing, whose ships numbered 55, with 465 hands; 5 ships and 107 men were also employed in whaling.

The arrival of the Old Colony Railroad the same year gave a new boost to several local product lines, including boot and shoe production, probably initiated on a small scale in the Colonial period. Between 1845 and '55, the number of shoemakers jumped from 20 to 442 with an annual product in the latter year worth $155,000. The census taker added that in addition there were "large quantities of shop work taken from clothing establishments in Boston and made up in this town." The manufacture of neck stocks alone employed 245 people.

By 1855 the town had begun both a gasworks and a new water municipal water system. Consulting engineer for the latter was William S. Whitwell, one of the chief engineers of Boston's Cochituate system.

Manufacture of textiles and tacks both given visible boost by Civil War needs. Plymouth Woolen mill (steam), erected 1863, became a substantial attraction for immigrant labor to the central business district, while Samuel Loring built his Plymouth Tack and Rivet Works on the former Robbins Cordage site along Town Brook.

E) Architecture

Residential: Comparatively few large or ambitiously-detailed Greek Revival and Italianate houses are known for the period; most of the two-story houses constructed are modes in character and date from the 1850's and '60s. These are concentrated in the northern half of Plymouth around the town center along Court and Samoset Streets. In addition to these houses, a number of one-and-a-half story cottages were also constructed. While sidehall-plan Greek Revival cottages were built across the town, they are most common in outlying areas; at the town center and at North Plymouth especially, center-entrance Greek Revival cottages, most of them with distinctive steeply-pitched paired or central wall dormers providing additional space on the half-story, were built in some numbers. Many of these incorporate Italianate detailing, suggesting the type remained popular through the end of the period. Story-and-a-half, gable-roofed workers' row housing and double cottages continued to be built at North Plymouth for cordage workers and were jointed by two-story single and double vernacular Italianate workers' houses. Other clusters of modest Greek Revival/Italianate houses stand at Boot Pond Road and at Ellisville: a pair of well-detailed Greek Revival structures, a two-story house with an adjacent cottage (with frieze windows retaining cast-iron grilles) stands on Sandwich Road north of Ellisville.

Institutional: Surviving institutional structures of the period include the Church of the Pilgrimage (Third Church), a two-story Greek Revival church of 1840 with a pedimented end gable updated in 1898 by J.E. Chandler with a projecting belfry tower and octagonal cupola in the Colonial Revival style and a one-story gable-roofed school c. 1850) on Long Pond Road with round-head windows in the Italianage style. In 1836, a girl's High School was founded. In 1831, the fourth church building of the First Parish was

constructed; other churches were established in the period including Baptist, Methodist, Episcopal and African Methodist congregations.

IX LATE INDUSTRIAL PERIOD (1870-1915)

A) Transportation Routes:

Expansion of railroad network with belated route to Middleborough 1892 from North Plymouth junction to Darby Pond (now abandoned). Street-car line from Plymouth center to North Plymouth and Kingston (1889) on Court Street extended to Manomet Beach east on Warren-Avenue and Rocky Hill along coast. Rds (1893) (Cummings, 1959 p. 3). Further extensions south along coast to Ellisville and Sagamore operated briefly during early 1900s along/Route 3A (Cummings, 1959, p. 12). Coastal road from Plymouth to Manomet and Ellisville (Warren-Rocky Hill - Route 3A) apparently improved during period).

B) Population (1870-1915)

Population doubles during this period. Catholic Church built on Court St. 1874. Foreign born population increases from 1022 to 1885 to 4065 in 1915. Composition goes from majority Irish, Canadian, German to majority Italian, Portugese. Evidence of Mormom Church on Standish Street 1903. Zion Evangelist Lutheran Church at North Plymouth at turn of century. First Church of Christ Scientist at Plymouth Center also turn of century.

C) Settlement (1870-1915)

Growth in North Plymouth spurred by construction of company housing by Plymouth Cordage at turn of the century. Expansion of development of White Horse Beach and area around Manomet. Other resort development at Pondville. Some development at Raymond.

LATE INDUSTRIAL PERIOD

D. Economic Base:

Period characterized by expansion of existing plants with steam capacity (Robinson Iron; Samoset Mills) or with the construction of new or relocated plants near the rail line (Edes Mfg., Emery shoe factory). New products included popular patent bedstead joint (1870, which lost its popularity when the wooden bedstead was replaced by iron, c. 1910) and a new copper wire extrusion process for small gauges (1885).

Movement in 1890's toward trusts felt in different ways by several Plymouth firms. Consolidation of tack industry into Atlas Tack forced the closure of Plymouth Mills. Plymouth Cordage's escape from a rope-making combine was in large part responsible for its continued existence when the larger group collapsed. Plymouth Woolen, taken, over by American Woolen Co., as their Puritan Mills branch, experienced considerable plant expansion. The same period, one of "wonderful growth and increase: wrote the local newspaper in a 1905 souvenir issue, also witnessed the establishment of two large worsted manufacturers -- Standish Worsted (1893) and Geo. Mabbett & Sons (1901, formed by the Standish founder). Plymouth Cordage shared in the community wealth: by 1911 40 percent of its output was being absorbed by the American and Canadian wheat belts whose wheat binding machines ran on nothing so well as twine from the Plymouth works. The company experienced plant expansions in 1899 and again in 1907.

E. Architecture

Residential: Well-detailed Stick Style, Queen Anne and Colonial Revival houses, two to two-and-a-half stories in height, were built through the period around the town center, particularly along Court and Samoset Streets and on the slopes southwest of Court Street; these form modest but substantial suburban neighborhoods of some architectural pretention. Larger and more ambitious Colonial Revival and Queen Anne houses were built along Court Street between North Plymouth and Plymouth Center overlooking the Harbor. Modest and compact summer resorts began to appear at Monomet, White Horse Beach and Priscilla Beach; one to two-story cottages were constructed in some numbers, particularly after the turn of the century, with simply-detailed Craftsman and Colonial Revival bungalow/cottages predominating. A few earlier Stick Sytle and Queen Anne cottages, most stripped of their original detailing, survive in these locations. There was little to no construction in the interior regions of the town, but some simple suburban and vernacular workers' housing was constructed south of the town center along Long and South Pond Roads. Multiple-family dwellings, most two-family and double houses in the Queen Anne and Colonial Revival sytles continued to be built at North Plymouth and Cordage.

Institutional: The most significant institutional structure constructed during the period is the First Parish's fifth church (1899, Hartwell, Richardson and Driver), a granite and sandstone Richardsonian Romanesque building with an offset tower. Other institutional buildings include the National Guard Armory (1906), a two-story brick building with a heavy corbel table, and the Federal Building (Post Office; 1914, Oscar Venderoth), a well-detailed Georgian Revival building with a colonnaded facade and cupola. Other well-detailed masonry Beaud-arp Colonial,

Colonial, Georgian and Renaissance Revival civic buildings, including the Probate Building (1904) Town Hall, Police Station and High School stand at the town center. Most of these date after 1900.

Commercial: A number of imposing and well-finished Georgian and Colonial Revival commerical buildings of masonry construction were built at the town center along Court Street after 1900; several stand two - and three stories and incorporate such details as Flemish bond and recessed arches. In general, these more ambitious commercial blocks, of which there are perhaps a half dozen, reflect the self-conscious awareness of the town's historical role in their historicist and, for the region, elaborate architecture. Also built at the town center were a number of low, one-story masonry and concrete storefront blocks.

Industrial: The largest and most important industrial complex of the period is the Plymouth Cordage factory at North Plymouth. In addition to some ten to twenty three, four and five sotry utilitarian brick manufacturing and storage buildings, most with articulated pier and spandrel construction and window bays with segmental arches, at least a few specialized buildings of greater architectural pretention were constructed. The best of these is the company Library, a well-detailed, one-story, frame Colonial Revival building, c. 1905.

X. EARLY MODERN PERIOD (1915-1940)

A. Transportation Routes:

Trolley lines abandoned in 1920's. Improvement of regional highways as autoroutes with original Route 3 (now 3A) north to Boston from Plymouth center, Route 44 (Middleborough Rd) with new location to Court St. and original Route 3 (Now 3A) south to Manomet, Ellisville and Cape Cod with some reolaction along coast highway. Plymouth - Carver airport established during 1930's on South Road with original hanger intact.

B. Population (1915-1940):

Population relatively stable during this period. Foreign born total drops to 3172 majority Italian, Portugese and Cape Verdean. Post World War II growth steady until late 60's when boom occurs. Catholic Chapel on White Horse Beach 1932 (summer services only.)

C. Settlement (1915-1940):

Continued company development induced residential growth at North Plymouth until 1920, and at existing settlement nodes. Growth slowed somewhat by depression. Post World War II development occurs along shore and in southeastern portion of town particularly Manoment.

D. Economic Base:

Declining value of water priviledges together with the general movement west of iron-related industry had brought about closure of most of Plymouth's iron works by 1906. And while the woolen and worsted companies were actively employed during WW I producing war goods, like the rest of the industry, they found conversion to peace-time production difficult. In addition, many of the waterfront activities and wharves, removed by the Pilgrim Tercentenary in 1920, effectively converted a previously maritime and industrial economy to one largely based on tourism.

Poultry raising, dairy farming, and fancy stock breeding, begun in preceeding period, flourished. Cranberry growers by 1915 numbered 29.

E. Architecture

Residential construction in the 1920's was confined to infill housing at the town center. There, Dutch Colonial and Colonial Revival suburban houses were built in some numbers along with a number of simpler one and two family Craftsman and Colonial Revival houses. New construction of a

more modest nature took place at the beachside resorts in the southern half of town, with small, one and one-and-a-half story cottages with simple Craftsman detailing built in some numbers. Institutional construction probably limited to a few Colonial or Georgian Revival schools; also, Plymouth Tercentenary-related construction of monuments etc., such as neoclassical temple at Plymouth Rock. Commercial architecture consisting primarily of one-and two-story masonry store blocks at North Plymouth and Plymouth.

XI SURVEY OBSERVATIONS

Existing survey is well-documented and covers range of 17th, 18th- and early 19th-century residential architecture across town as well as institutional and civic buildings at town center. Further survey should include later 19th and 20th century residential construction as well as institutional buildings away from the town center (i.e., Long Pond Road school, c. 2850) and commercial and industrial buildings throughout the town.

Industrial: Relatively little remains in Plymouth of her 19th century industries. Included in the town survey is the brick cotton mill on Billington Road (#I-I48), an unusual survivor, though its ruinous condition makes its continuous existence dubious. The Plymouth Cotton Co. built a mill here about 1809. This mill burned in 1812, and it seems probable that the replacement, a brick mill 36 x 92 built in 1813 according to Thacher, is in large part the building there now. It is not known how extensive was a later fire in 1843. Bryant Tolles, in his 1970 survey, thought that the mill "very likely dates from before 1815 (and) could be the earliest extant textile mill in the state" (his emphasis).

Chief omission from the survey is the Plymouth Cordage Co. Plant, whose principal mill dates from 1885. An NR nomination should be prepared for this factory, which had a national reputation and a long and well documented history. Other industrial structures within Plymouth include the Edes Mfg. Co. buildings on Lothrop Street and the brick picker house of the Plymouth Woolen & Cotton Co. (Sandwich Road at Eel River) a small 1-story 1890's brick building now a residence. The Plymouth Water Works pumping station on Lout Pond (1856?) and Duxbury Pier Light ("Bug Light", 1871) should also be further studied and inventoried; Plymouth's other light, the Gurnet Light, has already received NR listing (3/8/77).

DEVELOPMENT PRESSURES:

Most obvious pressures of growth evident along Route 3A (Court St) through North Plymouth with expansive commerical development that has overwhelmed historic feabric. Original Plymouth town center has been extensively renewed around Town Brook area and suffers from congestion of tourist exonomy along Plymouth Rock shoreline. Primary axis of development in South Pond area is Route 3 (Boston-Cape Cod) corridor with intense residential activity around major ponds and focus of industrial growth at new Plymouth High School (Long Pond Road). Manomet and Ellisville coastal areas suffer from severe storm damage on occasion, especially at White Horse Beach. Pilgrim Power nuclear station at Warren Cove poses obvious threats to entire Plymouth area, although immediate development continues in immediate vicinity, notabley around junciton of Route 3A bypass and Plymouth Plantation.

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September 1995

The Secretary of the Interior's Standards for the Treatment of Historic Properties 1995

U. S. Department of the Interior
National Park Service
National Center for Cultural Stewardship
& Partnership Programs
Heritage Preservation Services
Washington, D.C.

The Secretary of the Interior is responsible for establishing professional standards and providing advice on the preservation and protection of all cultural resources listed in or eligible for the National Register of Historic Places.

Treatments

There are Standards for four distinct, but interrelated, approaches to the treatment of historic properties--Preservation, Rehabilitation, Restoration, and Reconstruction. **Preservation** focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time. (Protection and Stabilization have now been consolidated under this treatment.) **Rehabilitation** acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character. **Restoration** is undertaken to depict a property at a particular period of time in its history, while removing evidence of other periods. **Reconstruction** re-creates vanished or non-surviving portions of a property for interpretive purposes.

In summary, the simplification and sharpened focus of these revised sets of treatment Standards is intended to assist users in making sound historic preservation decisions. Choosing an appropriate treatment for a historic property, whether preservation, rehabilitation, restoration, or reconstruction is critical. This choice always depends on a variety of factors, including the property's historical significance, physical condition, proposed use, and intended interpretation.

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Changes to a property that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

Standards for Rehabilitation

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in a such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Standards for Restoration

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.

2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.

6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.

7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

10. Designs that were never executed historically will not be constructed.

Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

Standards for Reconstruction

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.

2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.

3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.

4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture.

5. A reconstruction will be clearly identified as a contemporary re-creation.

6. Designs that were never executed historically will not be constructed.

Preservation as a Treatment. When the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, Preservation may be considered as a treatment. Prior to undertaking work, a documentation plan for Preservation should be developed

Rehabilitation as a Treatment. When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, Rehabilitation may be considered as a treatment. Prior to undertaking work, a documentation plan for Rehabilitation should be developed.

Restoration as a Treatment. When the property's design, architectural, or historical significance during a particular period of time outweighs the potential loss of extant materials, features, spaces, and finishes that characterize other historical periods; when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned, Restoration may be considered as a treatment. Prior to undertaking work, a particular period of time, i.e., the restoration period, should be selected and justified, and a documentation plan for Restoration developed.

Reconstruction as a Treatment. When a contemporary depiction is required to understand and interpret a property's historic value (including the re-creation of missing components in a historic district or site); when no other property with the same associative value has survived; and when sufficient historical documentation

exists to ensure an accurate reproduction, Reconstruction may be considered as a treatment. Prior to undertaking work, a documentation plan for Reconstruction should be developed.

The Secretary of the Interior's Standards for the Treatment of Historic Properties may be applied to one histori resource type or a variety of historic resource types; for example, a project may include a complex of buildings such as house, garage, and barn; the site, with a designed landscape, natural features, and archeological components; structure such as a system of roadways and paths or a bridge; and objects such as fountains and statuary.

Historic Resource Types & Examples

Building: houses, barns, stables, sheds, garages, courthouses, city halls, social halls, commercial buildings, libraries factories, mills, train depots, hotels, theaters, stationary mobile homes, schools, stores, and churches.

Site: habitation sites, funerary sites, rock shelters, village sites, hunting and fishing sites, ceremonial sites, petroglyphs rock carvings, ruins, gardens, grounds, battlefields, campsites, sites of treaty signings, trails, areas of land, shipwrecks cemeteries, designed landscapes, and natural features, such as springs and rock formations, and land areas havin cultural significance.

Structure: bridges, tunnels, gold dredges, firetowers, canals, turbines, dams, power plants, corn-cribs, silos, roadways shot towers, windmills, grain elevators, kilns, mounds, cairns, palisade fortifications, earthworks, railroad grades systems of roadways and paths, boats and ships, railroad locomotives and cars, telescopes, carousels, bandstands gazebos, and aircraft.

Object: sculpture, monuments, boundary markers, statuary, and fountains.

District: college campuses, central business districts, residential areas, commercial areas, large forts, industrial complexes, civic centers, rural villages, canal systems, collections of habitation and limited activity sites, irrigation systems, large farms, ranches, estates, or plantations, transportation networks, and large landscaped parks.

The Technical Preservation Services Branch (TPS), Heritage Preservation Services Division, prepares illustrate guidelines to assist property owners and others in applying the treatment Standards to specific property types such as historic buildings and landscapes. Guidelines establish a model process to follow when planning fo treatment, providing technical and design recommendations within a consistent philosophical context. Pleas write: Technical Preservation Services, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127 for further information as well as order forms.

TPS publishes other educational information on preserving, rehabilitating, and restoring historic buildings an landscapes. Many TPS publications, such as the *Preservation Briefs* series, are available from the Superintenden of Documents, Government Printing Office. Write to TPS at the above address for a free copy of the curren *Catalog of Historic Preservation Publications*, which includes stock numbers, prices, and a convenient order form.

KnowHow #3

INFORMATION AND ASSISTANCE FROM THE MASSACHUSETTS HISTORICAL COMMISSION

What You Need to Know about Listing on the National Register

The National Register is the nation's official list of buildings, districts, sites, structures, and objects important in American history, culture, architecture, or archaeology. The National Register program is administered through the Massachusetts Historical Commission on behalf of the National Park Service.

Nominations are based on comprehensive local inventories of cultural resources. Inventories are generally compiled on a communitywide basis by local historical commissions and record basic information about the historic, architectural, and archaeological significance of individual properties and districts in a community. The completed inventory allows preservation decisions to be made within a consistent context, and identifies properties that are eligible for listing in the National Register.

1. How do I get my property listed in the National Register?

Contact your local historical commission or the MHC to determine whether an inventory form has been prepared for your property or if any additional information is required; ask your local historical commission to forward their recommendation to the MHC regarding your property's eligibility for the National Register. The MHC staff will then evaluate your property to determine whether it meets the criteria for listing in the National Register either individually or as part of a National Register District.

Criteria for Listing

The criteria for listing in the National Register are:

a) association with events that have made a significant contribution to the broad patterns of our history;

b) association with the lives of persons significant in our past;

c) embodiment of distinctive characteristics of a type, period, or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) likelihood of yielding information significant in history or prehistory.

Properties must meet at least one of the above criteria to be eligible for listing in the National Register.

The MHC staff evaluation team meets regularly to evaluate properties for the National Register. The object of the evaluation is to determine whether the property meets the criteria for listing. Decisions are based on MHC's knowledge of the resource and its integrity, and an understanding of the significance of the resource within its context. The inventory serves as the basis for all evaluation decisions. When the evaluation team does not have sufficient information to render a decision, additional information may be requested. When National Register districts are being evaluated, MHC staff may make a site visit prior to completing the evaluation.

If your property is eligible, the MHC will send you a nomination form and an instruction manual. You may wish to work with the local historical commission in completing the nomination or seek the assistance of a professional preservation consultant.

MHC staff will review your nomination submission for completeness and may request additional information. When complete, the nomination will be edited and processed by MHC staff, who will present it to the State Review Board of the Massachusetts Historical Commission at one of its quarterly National Register meetings.

The State Review Board will review the nomination and vote whether or not to nominate the property to the National Register of Historic Places. After being voted eligible, the nomination will then be forwarded to the National Park Service in Washington, D.C., for listing in the National Register of Historic Places.

2. What are the benefits of being listed in the National Register?

Recognition: The National Register recognizes the significance of a property to the community, state, and/or nation.

Tax Incentives: National Register listing allows the owners of income-producing properties certain federal tax incentives for substantial rehabilitation according to standards set by the Department of Interior.

Protection: National Register properties are afforded limited protection from adverse effects of federally assisted projects; and, through automatic inclusion in the State Register of Historic Places, limited protection from state actions.

(over)

Grants: Inclusion in the State Register of Historic Places, which comes automatically with National Register listing, provides eligibility for matching state grants for restoration of properties owned by private nonprofit organizations and municipalities, when such grants are available.

3. Will National Register listing restrict the use of my property?

Listing in the National Register in no way interferes with a property owner's right to alter, manage, or sell the property when using private funds, unless some other regional and/or local ordinance or policy is in effect. If you use state or federal funds to alter your property, or need state or federal permits, the alteration will be reviewed by the MHC staff. Local funding and permitting do not trigger MHC review.

4. What is a National Register District?

Properties may be nominated to the National Register either individually or, if they are located within areas containing other significant properties, as districts. A National Register District may include any number of properties. The benefits and protections afforded by listing are the same.

5. Can my property be listed in the National Register if my community's inventory is not comprehensive?

Yes, in some cases. There are three exceptions to MHC's policy not to consider properties for the National Register in communities without comprehensive inventory.

If you can demonstrate that:

1) you, as the owner of income-producing property, are planning to do certified rehabilitation work and need National Register status in order to use the federal investment tax credits;
2) your property is in imminent danger of destruction; or
3) your property is of demonstrated state or national significance,

you may then submit a letter to MHC requesting a National Register evaluation for your property, stating why you want to have the property listed. However, you should note that without comprehensive inventory information, the eligibility of properties is difficult to establish. You will probably need to conduct supplemental inventory work to provide a context for evaluating the significance of your property.

6. If my house is listed in the National Register, are grant monies available for rehabilitation work?

Unfortunately, at present, the MHC does not administer federal or state rehabilitation funds for private homeowners. State grant monies, when available, are awarded only to properties owned by municipalities and non-profit organizations. Federal tax credits are available for substantial rehabilitation of income-producing and commercial properties.

7. Can I object to having my property listed in the National Register?

Yes. Once you receive notice that your property is being considered for listing in the National Register by the State Review Board, you may submit a notarized letter of objection to MHC. If your property is within a proposed National Register district, you will be invited to a public meeting in your community, prior to the State Review Board meeting, at which MHC staff will be available to answer questions about the listing. If your property is within a proposed National Register district, a majority of property owners (more than 50%) must submit notarized objections in order to prevent listing. If a majority of property owners do not object, the nomination may move forward and the properties for which there are objections will remain in the nominated district. If a majority of owners do object, the National Park Service may still formally determine the property(ies) eligible for listing, although actual listing will *not* occur.

8. Where do I go for assistance in preparing a National Register application?

Your local historical commission, local historical society, and library can provide useful resource material. Professional preservation consultants can assist you or your local historical commission with completion of the National Register nomination form. Also, when funds are available, matching Survey and Planning grants are awarded annually through MHC to fund professional National Register work. For more information, contact the MHC.

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Luther Briggs and The Picturesque Pattern Books

EDWARD F. ZIMMER

A new generation of American architectural pattern books began to appear in the 1840's, epitomized by A. J. Downing's *Cottage Residences* of 1842 and *Architecture of Country Houses* of 1850. The preceding type of books, by such authors as Asher Benjamin and Minard Lafever, was addressed to an audience of builders and architects. Those books placed considerable emphasis on technical problems of construction and on instruction in the "correct" use of Federal, and later Greek Revival decoration. Downing's books, and many others like them, supplanted the Greek Revival with a myriad of picturesque styles — "Rural Gothic," "Pointed," "Bracketed," "Italian," "Swiss," "Tudor," "Rhenish," and others — which generally employed irregular massing and decorative elements drawn from historic European styles. Consisting largely of attractive perspective views of houses in suburban and rural settings, with descriptions of their architectural and domestic virtues, the new pattern books were addressed directly to the residential client.

For architects trained in the Greek Revival style, the popularity of these books and the ideas they propounded must have initially posed a problem, but the books also offered them a source for learning the new styles. An examination of the work of a young Boston architect, Luther Briggs, in the 1840's and 1850's demonstrates the method by which at least one trained architect used the picturesque pattern books to master the new styles for the growing residential architecture clientele. A comparison of Briggs's drawings and buildings to several pattern book designs shows how he progressed from close copying, to combining and adapting, to producing his own picturesque designs.

Luther Briggs, Jr. was born in Pembroke, Massachusetts in 1822, son of a shipbuilder and descendent of generations of shipwrights.[1] That family tradition ended with young Luther, who was sent to private school in Pembroke and then to Hanover Academy. He taught school for a time before 1839, when he went to work in the office of one of the leading architects and engineers in Boston, Captain Alexander Parris,[2] whose wife was Luther's aunt.[3]

Parris (1780-1852) had also taught school in Pembroke as a young man.[4] He had started his architectural career in Maine, designing several buildings in the Federal style, before serving as an engineer in the War of 1812. He settled in Boston after the war, and helped introduce there the forms and motifs of the Greek Revival style, with such buildings as St. Paul's Church of 1819, which still stands on Tremont Street.[5] Parris continued to work as an engineer as well, providing combined architectural and engineering services to such clients as the federal government at the Navy Shipyard in Charlestown.

When Briggs later cited Parris as the instructor for his "technological education,"[6] he may have been implying that

whatever stylistic lessons he had learned in that office were soon outmoded. In the late 1830's and early 1840's when Briggs was serving as a draftsman in his uncle's office, and in fact to the end of Parris' career, the older architect's designs remained essentially Greek Revival. Parris' designs for residences and for public buildings, such as Quincy Market, were well proportioned and restrained, while his commercial buildings, such as the Faneuil Hall Markets and Commercial Wharf, and military/industrial buildings such as those at the Charlestown Navy Shipyard were even more severe.

About 1842, Briggs left Parris' office and went to work for Boston architect Gridley J. F. Bryant as a draftsman.[7] Bryant was only twenty four at the time, and had not yet established his later position of preeminence among Boston commercial architects. Bryant's early career needs additional study, but presumably Briggs worked largely on civic and commercial projects while in Bryant's office, probably similar in style to the granite structures Bryant designed a few years later such as the Boston City Jail (Charles Street Jail) of 1848, the Deer Island Almshouse of 1849, and the State Street Block of 1858.

One project that came out of Bryant's office during Briggs's term there that was closer stylistically to what the young draftsman would later explore in his own practice was a design for a small, Gothic chapel, dated November 1, 1843 (Figure 1). The drawing was submitted to a design competition for a chapel for Mount Auburn Cemetery in Watertown, Mass.[8] While Gothic churches had been rather common in Boston for some time before 1843, Bryant's competition drawings would have brought Briggs directly into

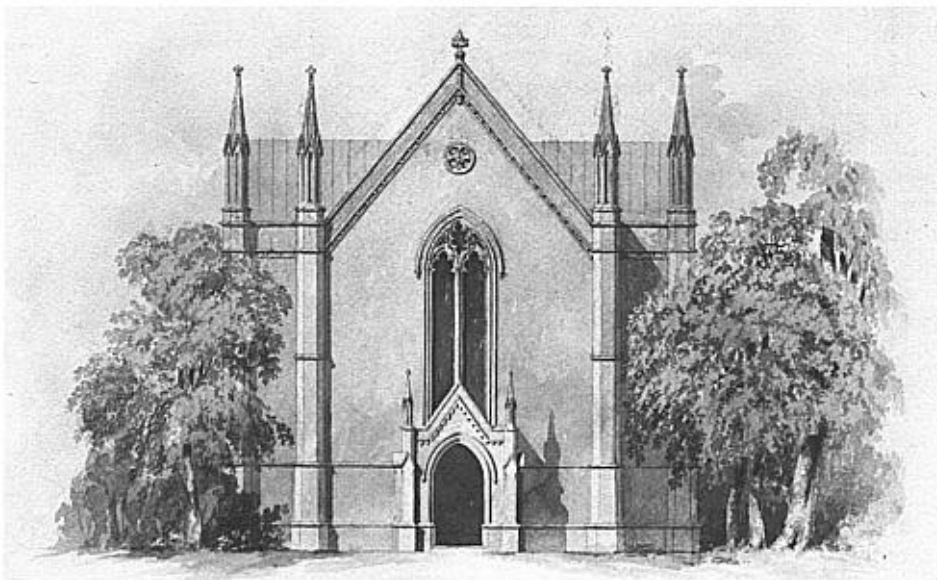


FIG. 1. FRONT ELEVATION OF A CHAPEL FOR MOUNT AUBURN CEMETERY, Watertown, Massachusetts. Detail of a drawing submitted by G. J. F. Bryant to a design competition in 1843. (Photo SPNEA.)

contact with an architectural style that was gaining in popularity for domestic, as well as ecclesiastic architecture, and was quite different from most of what he had seen in Parris' and Bryant's offices.

In the spring of 1844 Briggs consulted with his father and his uncle Parris about leaving Bryant's office and establishing his own architectural practice. Both evidently approved, though the elder Briggs offered this fatherly advice in a letter to Luther:

> If you leave Mr. Bryant do every thing [in] your power to part on friendly terms till [sic] him that nothing but a hope of bettering your situation induces you to leave him for I think you cannot be but sensible that he has been of advantage to you. And he may be in future.[9]

"Luther Briggs, Jr., architect" first appears in the *Boston Directory* in 1844, in partnership with Joseph Howard. Their partnership was brief, as Howard appears in the directories only in 1844 and 1845, and little is known about him. A high spirited, sophomoric letter he sent to Briggs from Nashua, New Hampshire in April of 1843, while Luther was working for Bryant, indicates that Howard was familiar with Bryant and his office, suggesting that perhaps Howard had been another of Bryant's draftsmen.[10]

Several drawings survive that are attributed to the brief period of Briggs's and Howard's partnership. All are competently drawn and nicely colored with washes, and all represent buildings of the Greek Revival style (Figure 2). Although these drawings are usually associated with Howard, it seems likely that Briggs, based on his training and experience with Parris and Bryant, would have begun his practice employing the same established Greek Revival motifs and forms as his early partner.

Although it is known that Briggs gained some commissions for commercial buildings in downtown Boston, and applied his engineering skills to such projects as a beacon on Cape Ann[11] and factories at Salem, Rockport, and elsewhere,[12] another architectural market was blossoming just at the time Briggs opened his practice for which he was less well prepared. Commuter rail lines were being built outward from Boston, and around their stations suburban residential developments were burgeoning. One such line, the Old Colony Railroad, began carrying passengers between Boston and Plymouth in November, 1845,[13] connecting the area where Briggs grew up, and where his family ties remained, to the location of his new office and practice. A vast new market for domestic architectural services was opening, but Briggs would attract few suburban readers of Downing with the style he had learned from Parris. For the new market and its new taste, Briggs followed the clients and turned to the pattern books.

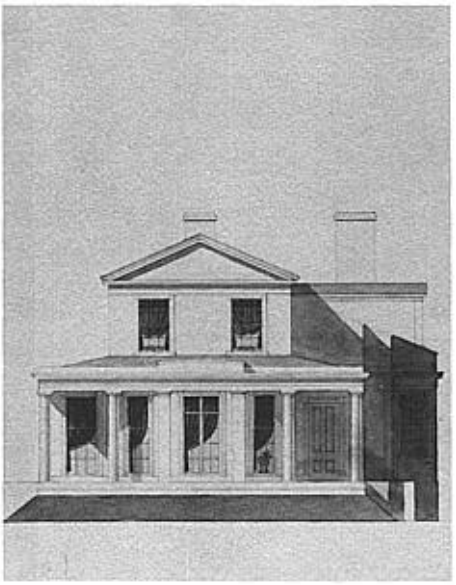


FIG. 2. ELEVATION FOR A COTTAGE IN THE GREEK REVIVAL STYLE, attributed to the firm of Luther Briggs and Joseph Howard, c. 1844-1846. (Photo SPNEA.)

The first known contact between Luther Briggs and the new picturesque architectural pattern books involves a pair of drawings depicting elevations (Figure 3) and plans for a modest house. Both are inscribed "L. Briggs Jr. Architect, No. 4 Court Street, Boston." Although the drawings are undated, it is known that Briggs occupied an office at that address for a relatively brief period, from 1846 to 1852.[14]

Briggs's cottage is clearly related to a pair of designs in A. J. Downing's *Cottage Residences* of 1842. The drawings are most directly based on Downing's Design #4,* "An Ornamental Farm House" (Figure 4), but draw certain elements from Design #2, "A Cottage in the English or Rural Gothic Style" (Figure 5). The two Downing designs are essentially variations on a single theme, with #2 representing the more elaborate version, both in structure, with the hip roof, balcony, and bay window, and in decoration. Design #4 would be less expensive to build, employing simpler decoration on a simpler structure. Downing preferred this consistency of structure and ornament, but Briggs chose to combine the simpler structural features of Design #4 with some of the more elaborate decorative details of #2.

The Briggs cottage derives the major components of its exterior composition — the main block of the house with a gable roof parallel to the front plane, the rear ell, the simple, single-story front piazza — quite directly from Design #4. Both #2 and #4 display a prominent facade gable with a decorated verge board, a three part vertical division of the facade, and the suggestion of masonry construction, all of which Briggs adopts. Although he follows Design #4 in some smaller details, such as the use of rectangular, rather than diamond window panes, Briggs draws upon Design #2 for several decorative elements. His cottage displays labels or drip moldings over the doors and windows, twisted chimney pots, and tracery arches in the main facade gable window, all details used in Design #2 but not in #4.

Several areas of Briggs's design that depart from both models further illustrate the architect's wedding of a simple structure with elaborate ornament. Briggs eliminates the two second-story windows from the front of the house, but extends the verge board decoration of the facade gable over all the eaves of the house, adds small decorative windows to the peaks of each gable, and replaces the front door and first-story windows with French doors.[15]

It is not clear whether Briggs designed the cottage to meet the specific needs of an actual client, but it is apparent that his reliance on the Downing plans stopped with the exterior. Briggs's plan divides the first floor of the front of the house into only two rooms, with no hall or vestibule, stairs, or bedrooms in that part of the house (Figure 6). As in the Downing plans, the Briggs kitchen is in the ell, but his plan shows none of the small service rooms which Downing strongly favored.

In the "Rural Gothic" cottage example, Briggs adapted two pattern book designs to achieve a structurally simple, decoratively ornate house. This combination of sources into a single design, along with his divergence from the pattern book plans for the interior arrangement, established Briggs's basic method of using the books. In this first case, it seems likely that the architect was practicing the adaptation of pattern book models to his

*As design numbers vary among the different editions of Downing's and Calvert Vaux's pattern books, all the design numbers referred to in this article correspond to those in the most readily available modern reprint editions—Dover Publications' *Architecture of Country Houses* (1969) and *Villas and Cottages* (1970) and Library of Victorian Culture's *Cottage Residences* (1967).

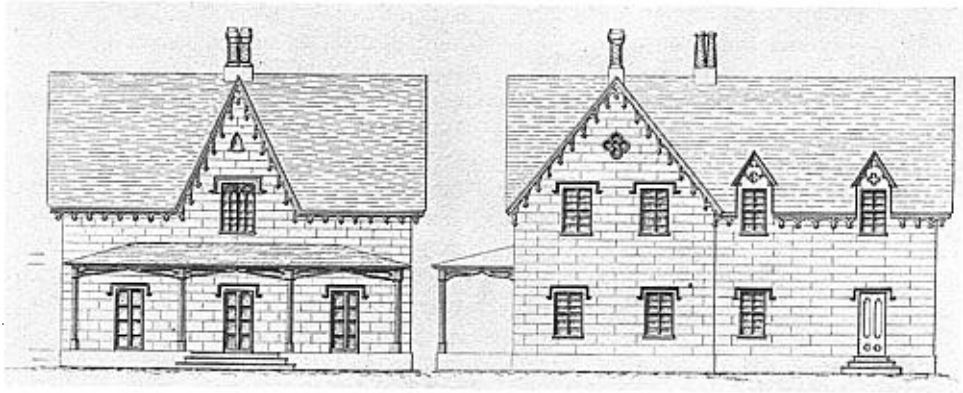
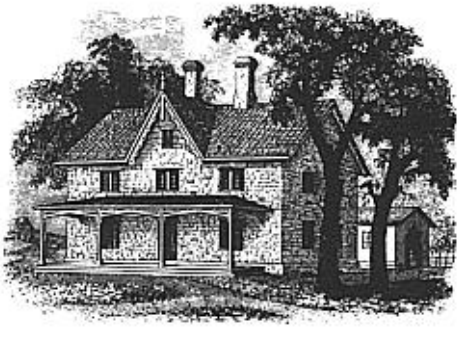


FIG. 3. ELEVATIONS FOR A GOTHIC COTTAGE, by Luther Briggs, c. 1846-1852. (Photo SPNEA.)



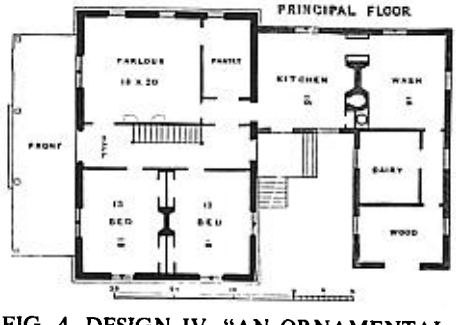


FIG. 4. DESIGN IV, "AN ORNAMENTAL FARM HOUSE," from A. J. Downing's *Cottage Residences,* 1842. (Photo SPNEA.)

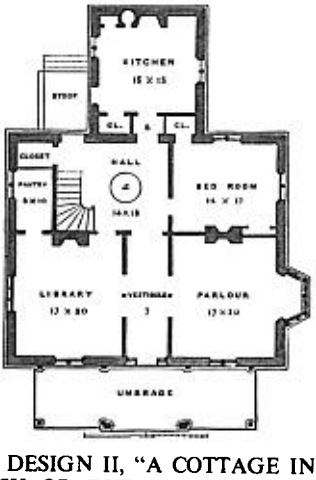


FIG. 5. DESIGN II, "A COTTAGE IN THE ENGLISH OR RURAL GOTHIC STYLE," from A. J. Downing's *Cottage Residences,* 1842. (Photo SPNEA.)

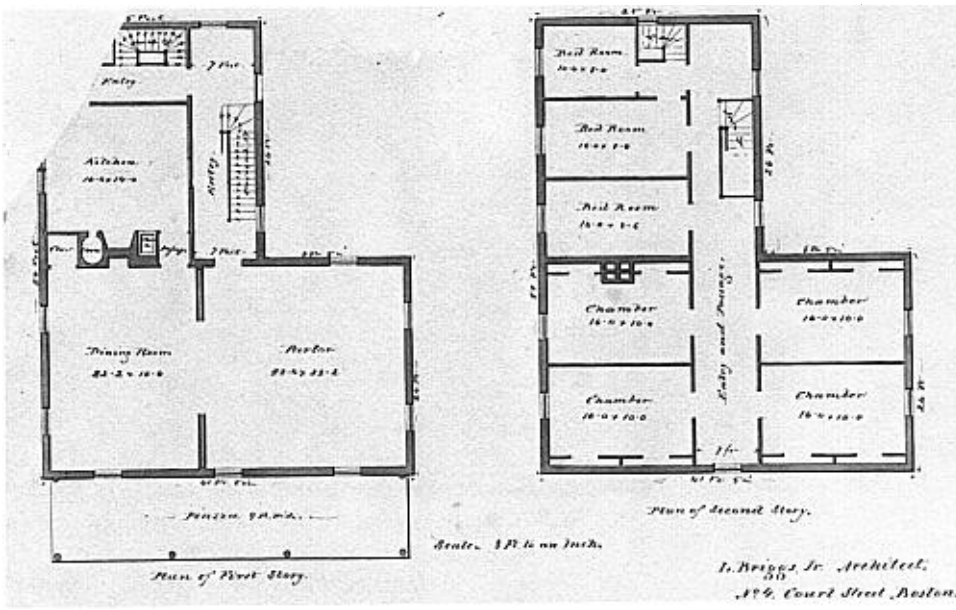


FIG. 6. FLOOR PLANS FOR BRIGGS'S GOTHIC COTTAGE, c. 1846-1852. (Photo SPNEA.)

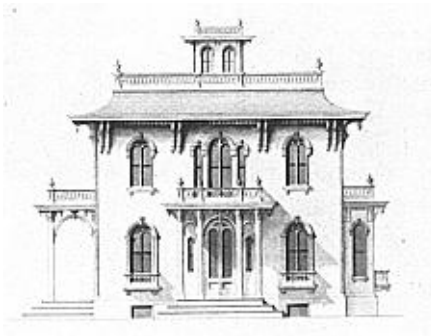


FIG. 7. FRONT ELEVATION OF A HOUSE FOR CHARLES JENKINS, by Luther Briggs, 1855. The house still stands at 23 Park Street in Dorchester, Mass. (Photo SPNEA.)

own ideas. In the next episode an actual building was involved.

Briggs spent the years between 1852 and 1855 working on government contracts. During that period he also moved to Dorchester, into a neighborhood on the Old Colony Railroad (O.C.R.R.).[16] Around 1855 he began to gain residential commissions, and in the next few years his most intensive use of the pattern books seems to have occurred.

In his first few designs from that period — a house (Figure 7) for Charles Jenkins at Harrison Square, Dorchester (another neighborhood around an O.C.R.R. station); a Baptist church in Abington, Massachusetts (again on the O.C.R.R. line); a house for Thomas Dwight on Nahant, Massachusetts; and a design for Liberia College in Africa — Briggs employed a symmetrical facade and nearly cubic massing, decorated with more up-to-date details, generally of an Italianate type. In late 1856 and early 1857, however, he designed a much more irregular, picturesque house that was built

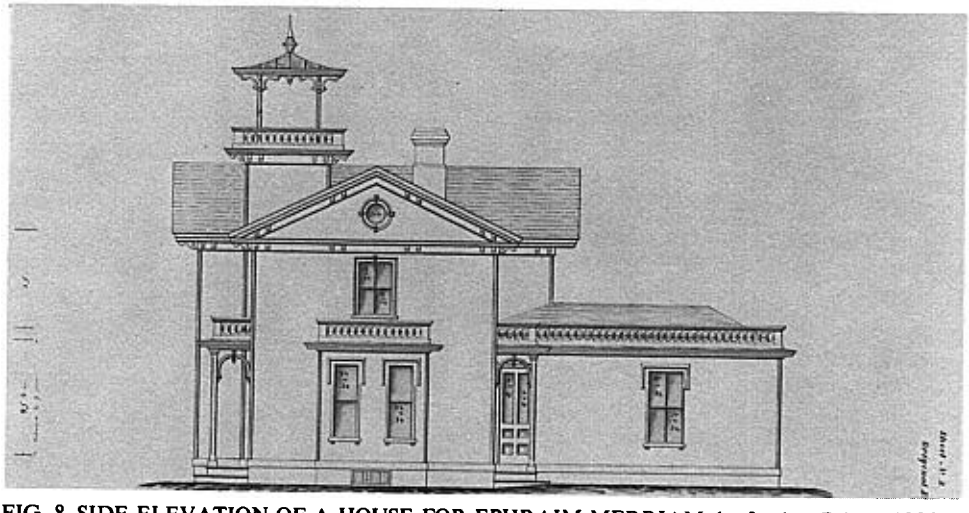


FIG. 8. SIDE ELEVATION OF A HOUSE FOR EPHRAIM MERRIAM, by Luther Briggs, 1856. (Photo SPNEA.)

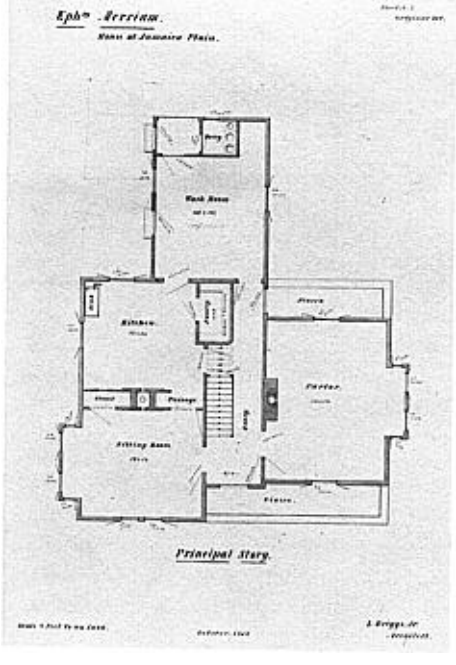


FIG. 9. PLAN OF THE PRINCIPAL FLOOR OF THE MERRIAM HOUSE, by Luther Briggs, 1856. (Photo SPNEA.)

in Jamaica Plain for a grocer, Ephraim Merriam.

The house no longer stands, and only one elevation drawing, a side view, still survives (Figure 8). Combined with a first-floor plan (Figure 9), however, the front facade of the house can be envisioned, with a central tower positioned in the corner formed by two gable roofed sections set perpendicular to one another. The gable of the left section faces forward, while on the right the roof ridge is parallel to the front plane of the house. The tower appears to consist of four stories, open at the top level, sheltered by a low pitched, concave curved roof.

Briggs could have adapted the Italianate form and decoration of this design, with its low pitched gables, balustrades, enframed windows and horizontally banded chimney caps from any of several designs in Downing's *Cottage Residences* or his *Architecture of Country Houses* of 1850. Both Design #6 in *Cottage Residences* and #22 in *Country Houses* [See Figure 24.] show the same basic massing as the Merriam house, with a central tower between perpendicular sections of the

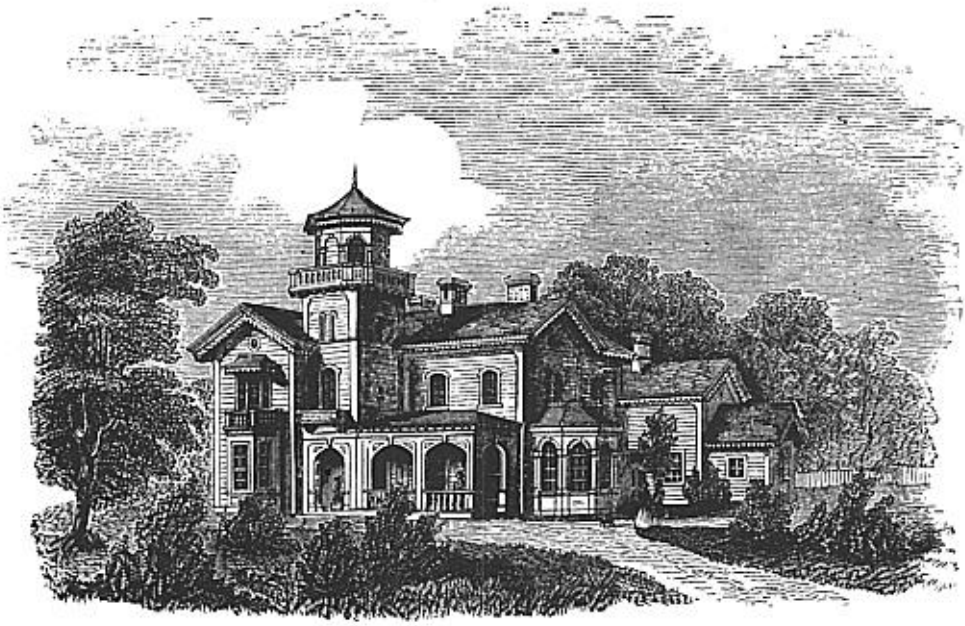


FIG. 10. DESIGN 13, from Calvert Vaux's *Villas and Cottages,* 1857. Vaux states the house was built for a Mr. Rogers of Ravenswood, Long Island. (Photo SPNEA.)

house, but otherwise are only generally similar to the Merriam design. A design in Calvert Vaux's *Villas and Cottages* (Figure 10), another popular pattern book, more closely resembles the Merriam design, particularly in the form of the tower. However, the Vaux book was not published until 1857, after Briggs had begun the Merriam design. What is striking about this project is how much more closely the Briggs design resembles this whole group of pattern book designs than it does his own immediately preceding work.

Whatever relationship there might have been between Briggs's Merriam house and Vaux's Design #13 (perhaps through some other common source), Briggs's attention was focused on the pattern books, for later in 1857 he was involved in his most ambitious use of the books. Between October 1857 and January 1858, Briggs designed a residence for James F. Bigelow, a wealthy shoe manufacturer, to be built in East Abington (now Rockland), Massachusetts. Included in the drawings for the project are five alternate facade designs, several of which relate closely to pattern books sources. As only two of the front elevation drawings are dated, the five cannot be set in chronological order with certainty, but perhaps the first facade proposal was the one inscribed "Cottage Villa in the 'Rhenish Picturesque' Style" (Figure 11).

Similar designs appear in the pattern books already discussed. Design #14 in *Cottage Residences* (which did not appear in the 1842 edition but was published in subsequent editions before 1857) is de-

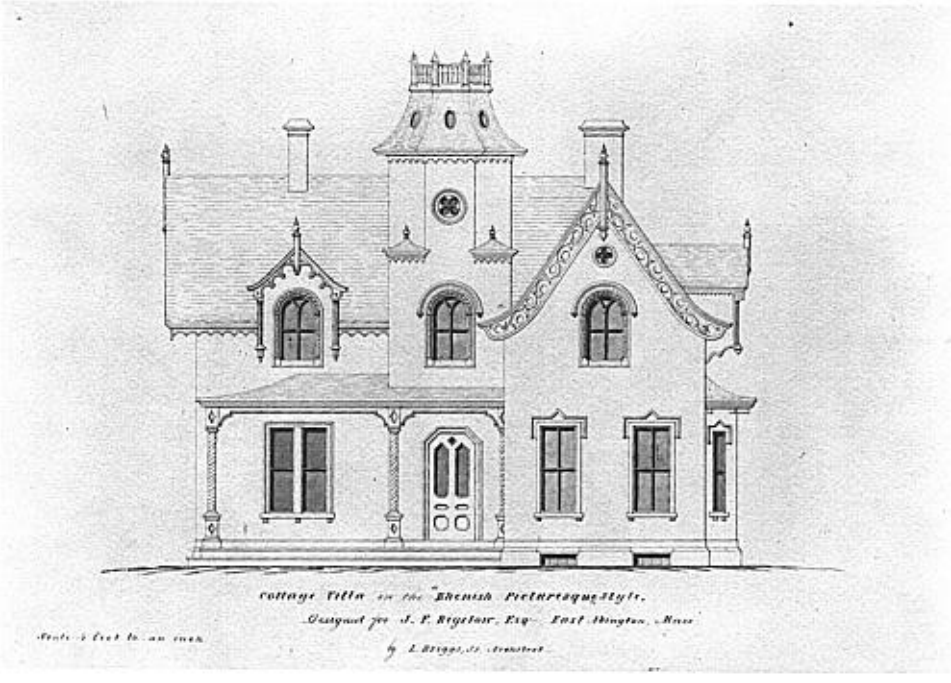


FIG. 11. "RHENISH" VERSION OF THE FRONT ELEVATION OF A HOUSE FOR JAMES F. BIGELOW, by Luther Briggs, 1857-1858. (Photo SPNEA.)

FIG. 12. DESIGN XIV, from A. J. Downing's *Cottage Residences.* (Photo SPNEA.)

scribed by Downing as an example of the "Rhine Style" (Figure 12). The building consists of two gabled sections arranged in an L-shaped plan, with a central tower at the front of the house, at the junction of the two main sections. The roofs of the house display a slight concave curve at the eaves, and the forward facing gable, on the left side of the facade, has a highly ornamented verge board. The central tower, containing the entrance, is flanked on the right by a one story porch, and capped above the third story by a tall, steeply pitched concave roof.

Design #26 in Vaux's *Villas and Cot-*

tages of 1857 shows a very similar house, described as built near Worcester, Massachusetts. A service wing has been incorporated into the plan, on the left side of the house, and the detail of the decoration altered, largely in keeping with the use of wood, rather than stone construction as in the Downing example. In general, however, the two designs are quite similar, perhaps indicating that the Worcester house was based on the Downing illustration.

Briggs's Rhenish facade might have been based on either of these designs, with a shifting of the front-facing gable from the left to the right, and alterations in the roof of the tower. However, Downing's *Architecture of Country Houses* includes a design (perhaps derived from *Cottage Residences* #14) that is closer in several details to the Briggs design. (See cover.)

The relationship of the components of the facade in the *Country Houses* design is quite different from the earlier Downing and later Vaux designs, and from Briggs's Rhenish design. The front-facing gable is placed near the center of the composition, and contains the front entrance, while the tower is placed off-center, near the left side of the front. Briggs did not adopt this massing, retaining instead the format he had used in the Merriam House and had seen reenforced in the other two pattern book Rhenish designs, but he borrowed several details quite directly from the *Country Houses* version. Most prominent among them is the decorative verge board with pendant and finial of the front gable, which Briggs copied closely. He also followed the placement and much of the decoration of the two small dormers that straddle the eaves, one above the porch and one on the side of the house opposite the porch. The enframements of the three right hand windows of the first floor of the Briggs design appear to be adaptations for wooden construction of the form of the stone lintel over the first floor window in the tower of the Downing design.

The Downing villa employs twisted columns on the porch and flanking the entrance and the balcony above it, and the text describing the design illustrates twisted column forms and praises their beauty and domestic appropriateness. The Briggs drawing incorporates this element, as freestanding columns to support the porch roof, and as engaged columns at the second story windows and dormers. The form of the chimney caps in the Briggs design also follows Downing's example.

Even Briggs's inscription on the drawing, "Cottage Villa in the 'Rhenish Picturesque' Style," seems to reflect his use of the *Country Houses* book, and specifically Design #32. While Downing differentiates between the cottage and the villa according to the number of servants required for their operation,[17] he labels a few of the designs in the 1850 book as "Cottage-Villas," such as #24 and #25. Downing's description of Design #32 refers several times to the design's style being that of the Rhine region, and his title for the design is "A Lake or River Villa for a Picturesque Site." As Briggs had adopted Downing's composite title "Cottage-Villa" to describe the Bigelow design, he combined the author's style designation and design title to label the Bigelow facade "Rhenish Picturesque."

One element of Briggs's Rhenish facade appears to have been drawn from another design in *Country Houses,* "A Villa in the Norman Style." A view of the front elevation of the house (Figure 13) shows an arched door flanked by twisted columns, with the arch itself decorated by a zig-zag pattern, topped with a drip molding. The three second-floor windows of Briggs's Rhenish facade are very similar in outline and decoration to the Downing doorframe.

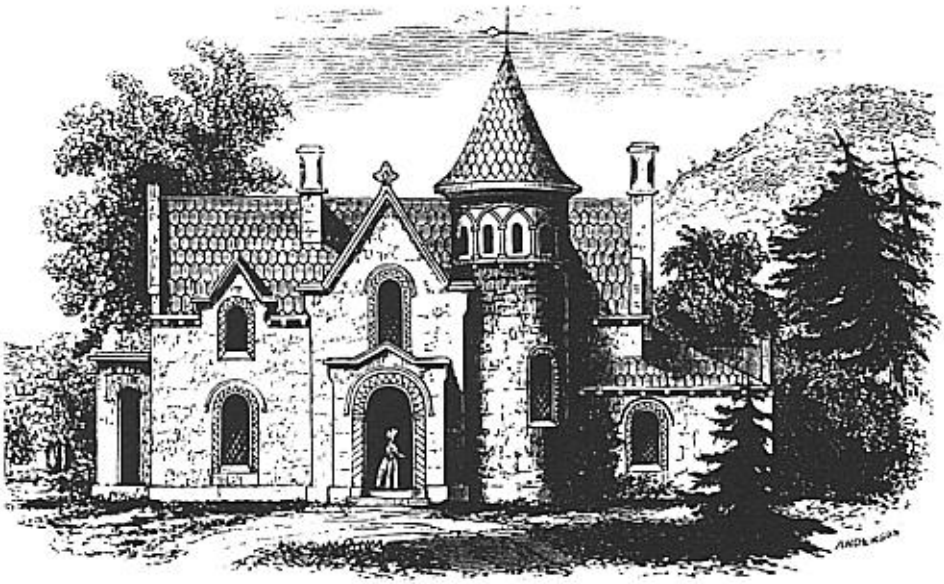


FIG. 13. "VILLA IN THE NORMAN STYLE," DESIGN XXI from A. J. Downing's *Architecture of Country Houses,* 1850. (Photo SPNEA.)

James Bigelow may have been a difficult client to please, or perhaps he shared Briggs's interest in the client-oriented pattern books and suggested various designs and details for the architect to incorporate into his plans. In any case, Briggs prepared four more drawings for the Bigelow facade. The earlier of the two dated front elevation drawings, the one of November 1857, shows a proposed facade for the Bigelow House in what Downing would have called the "Rural Gothic Style," as displayed in *Cottage Residences* #2 or *Country Houses* #29. The chimney tops in the Briggs drawing (Figure 14) are a familiar Downing form, and the decoration of the veranda, especially in the elements that form the pointed arches, is similar to that of the porch in *Cottage Residences* #2. (See Figure 5.) However, a comparison of Briggs's Gothic facade with the 1846-1852 elevations for the cottage (Figure 3) demonstrates how much Briggs's confidence and competence, both as a draftsman and as a designer, had increased. By 1857, the elements of this kind of Gothic design were presumably fully incorporated into Briggs's decorative vocabulary, eliminating his need for direct reference to specific pattern book sources.

A third drawing of a front elevation for the Bigelow House appears to be an exploration of a less expensive expression of the Gothic style. The elevation is essentially a simpler version of the towered Gothic proposal, with the tower reduced, virtually to the point of being a large dormer (Figure 15).

A fourth design for the Bigelow facade

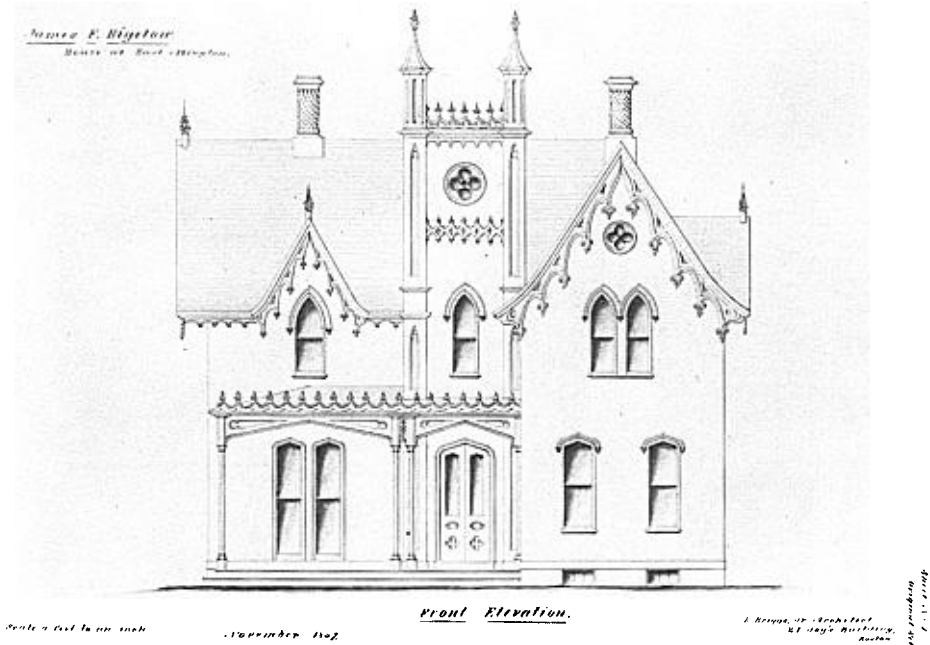


FIG. 14. "TOWERED GOTHIC" VERSION OF THE FRONT ELEVATION FOR BIGELOW'S HOUSE, by Luther Briggs, November, 1857. (Photo SPNEA.)

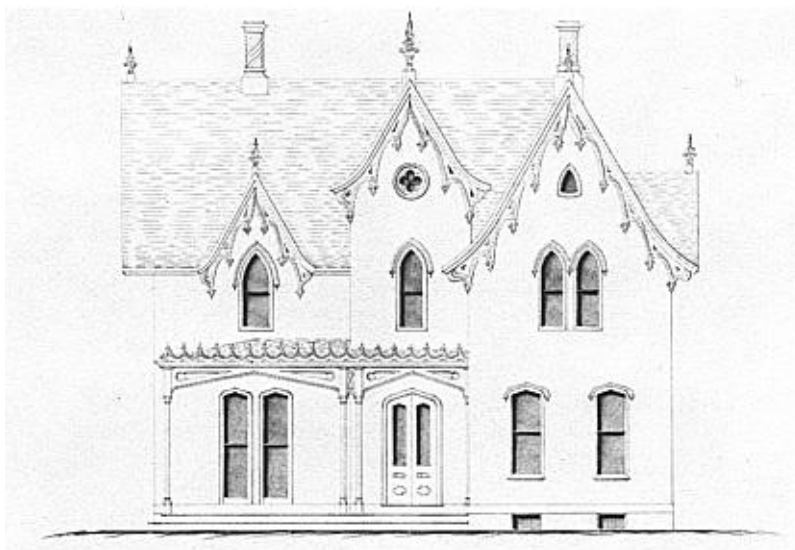


FIG. 15. "GOTHIC" VERSION OF THE FRONT ELEVATION FOR BIGELOW'S HOUSE, by Luther Briggs, 1857-1858. (Photo SPNEA.)

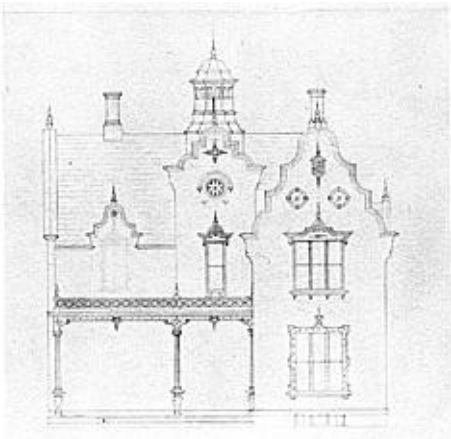


FIG. 16. "FLEMISH" VERSION OF THE FRONT ELEVATION FOR BIGELOW'S HOUSE, by Luther Briggs, 1857-1858. (Photo SPNEA.)

FIG. 17. DESIGN 37, from Calvert Vaux's *Villas and Cottages*, 1857. (Photo SPNEA.)

is drawn in pencil, and was never completed. It has no inscription, but by size and massing of the facade can be identified as a Bigelow study (Figure 16). None of the Downing designs in *Cottage Residences* or *Country Houses* employ this kind of Flemish-type gable, but two designs in Vaux's *Villas and Cottages*, #30 and #37, do display it. Design #37 (Figure 17) shows several sizes and forms of these gables which Briggs could have adapted to his Flemish facade.

Design #37 also includes a tower with a recessed, octagonal top story and an ogee curved roof. A comparison of this tower with the tower of the "Rhenish Picturesque" facade suggests a possible source for that element. The Rhenish tower, a consistent element of the two Downing and one Vaux Rhenish designs, is altered by Briggs. Like the tower of Vaux's Design #37, Briggs's Rhenish tower rises to an octagonal top floor, capped with an eight sided roof pierced with small windows. The tower might have first attracted Briggs to Design #37, later leading him to attempt the Flemish facade, or the Flemish design may represent an early, unsuccessful attempt to solve the problem of the Bigelow facade, that was rejected except for the form of the tower.

The final Bigelow facade drawing is dated January, 1858, as late a date as any of the eighteen Bigelow project drawings (Figure 18). The Tudor style of the facade is reminiscent of several designs in Downing's books. Among them is Design #21 in *Country Houses* (Figure 13), which is mentioned above in reference to the second-story windows of the Rhenish facade, and the chimneys shown in #21 do resemble the form of those in Briggs's Tudor design. However, Design #31 of the same book seems a more likely source of several details of the Briggs Tudor facade (Figure 19). The second-story window on the right side of the facade in

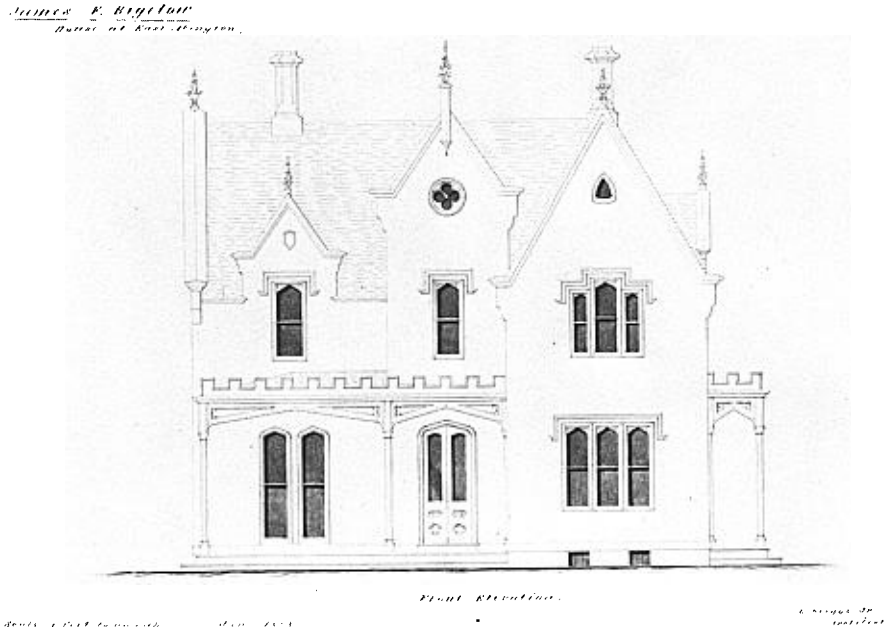


FIG. 18. "TUDOR" VERSION OF THE FRONT ELEVATION FOR BIGELOW'S HOUSE, by Luther Briggs, January, 1858. (Photo SPNEA.)

the Briggs design closely resembles the second-story side windows of the Downing house, and most of the rest of the Briggs windows are derived from this form. The shield decoration of the small dormer, the forms of the finials, the small decorative window in the central gable, the shape of the entrance, and the posts and arches of the veranda all seem adapted by Briggs from this source.

The suggestions that a hard-to-please client, and conflicting desires for grandeur and economy played roles in the designing of five facades are supported by the

FIG. 19. "VILLA IN THE POINTED STYLE," DESIGN XXXI from A. J. Downing's *Architecture of Country Houses*, 1850. (Photo SPNEA.)

FIG. 20. RESIDENCE OF J. F. BIGELOW, as built in East Abington (now Rockland), Massachusetts, 1858. Wood engraving published in Benj. Hobart's *History of the Town of Abington*, 1866. (Courtesy of Mugar Library, Boston University.)

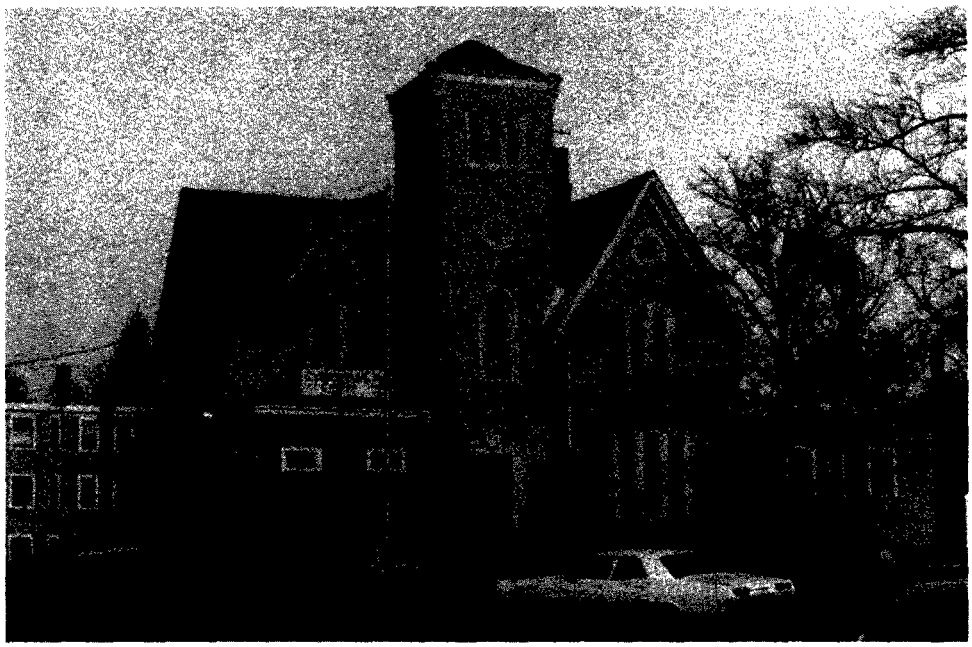


FIG. 21. JAMES F. BIGELOW HOUSE in 1977, Rockland, Massachusetts. (Photo by author.)

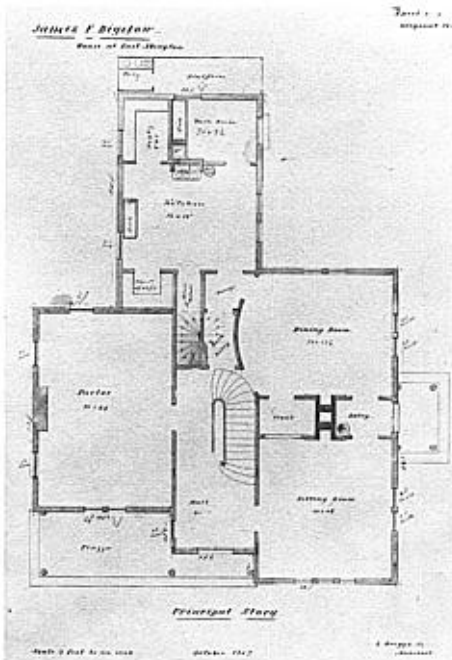


FIG. 22. PLAN OF THE PRINCIPAL FLOOR OF THE BIGELOW HOUSE, by Luther Briggs, October, 1857. (Photo SPNEA.)

form of the house as it was built (Figures 20 and 21). The later dated drawing, in the Tudor style, is closest of the five to the actual house, indicating that Briggs finally found a design that Bigelow would accept. The drawing is the simplest of the five in ornamentation, and has no tall tower. The house as built includes a four story tower, yet otherwise generally follows the Tudor drawing, apparently representing the final compromise of economy and grandeur. Other differences between the drawing and the house appear in the forms of most of the windows, the size and decoration of the porches, and the lack of finials on the house. A major shift in the appearance of the facade occurs with the termination of the front veranda at the side of the tower, emphasizing the form of the tower and drawing more attention to the entrance. The entrance is further accentuated by the placement of a small balcony at the window just above it, a feature that appears in the Downing and Vaux Rhenish designs, but in none of the Briggs facade drawings.

The Bigelow project represents Briggs's most extensive use of the pattern books. The five facade drawings employ four diverse styles, and incorporate elements from at least four, and perhaps several more pattern book designs. Even more than in the cottage example, Briggs adapts the borrowed elements to his own decorative purposes, often combining portions of quite different designs into a single facade. As in the cottage example, the floor plan of the Bigelow house does not copy any of the plans of the designs from which the decorative elements were drawn, but rather is apparently based on the needs of the particular client (Figure 22). In fact, the drawing of the floor plan is dated October, 1857, before either of the dated facades, indicating that the interior arrangement of the house was established months before the external arrangement was determined.

One final feature of the Bigelow house episode involves not Briggs's use of the pattern books, but a pattern book's use of Briggs's work. In 1863 *Holly's Country Seats* was published in New York, the work of architect Henry Hudson Holly. Among the designs #10 is particularly interesting, for in plan and perspective view it bears strong resemblance to the Bigelow house. What is especially striking about the Holly design is that it seems to combine elements of the Tudor elevation drawing and the Bigelow house as it was actually built (Figure 23).

The Holly design resembles the Briggs Tudor drawing in the basic arrangement and proportion of the facade, in the general form of the windows and the labels above them, in the decoration of the porch, and in the use of finials. Holly

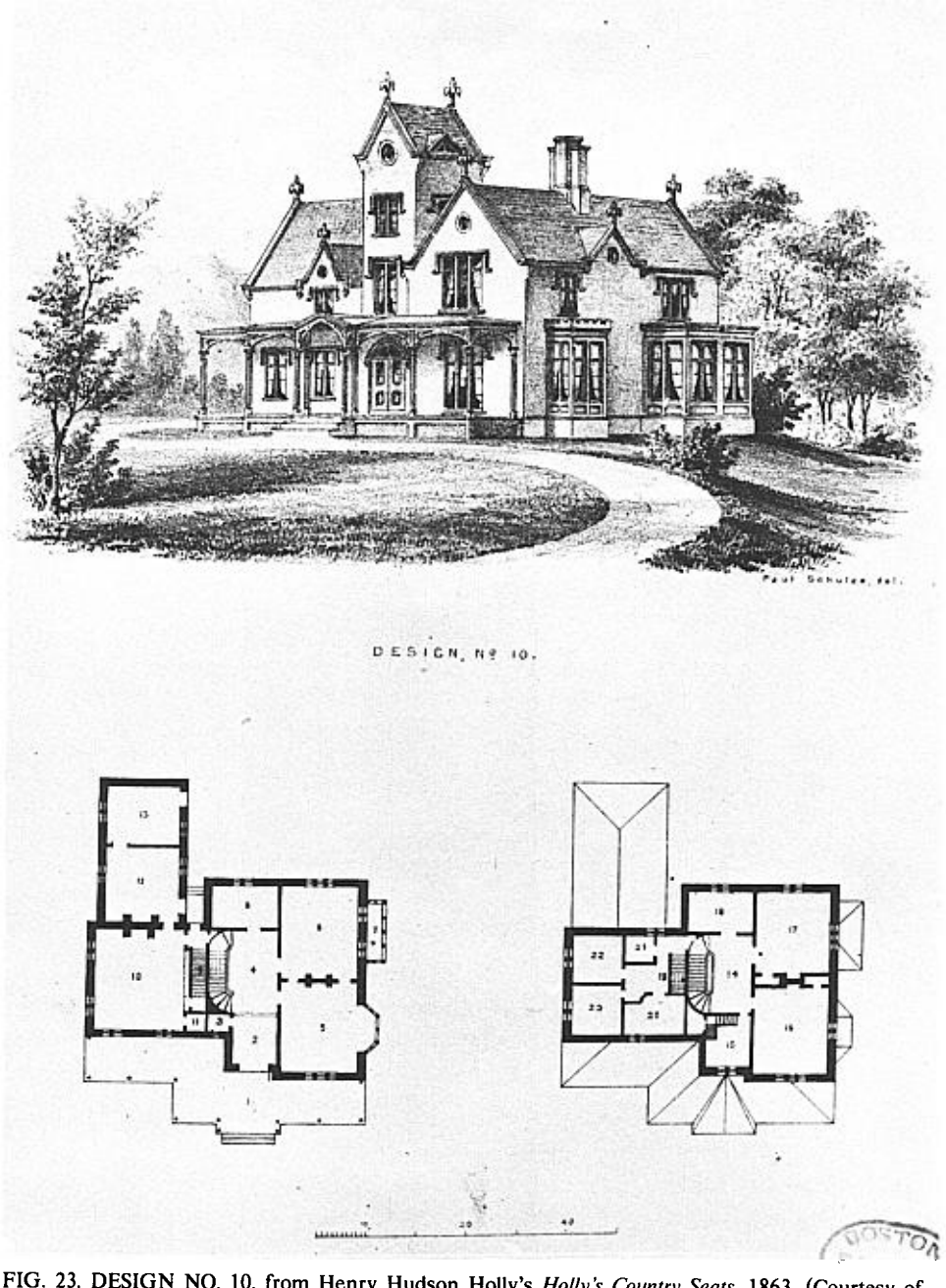


FIG. 23. DESIGN NO. 10, from Henry Hudson Holly's *Holly's Country Seats*, 1863. (Courtesy of Boston Public Library.)

omits the crenelation over the porches shown in the Tudor drawing, which was also omitted from the Bigelow house as built. Holly does, however, retain crenelation over the bay windows he places on the right side of his house. The other major element in which Holly follows the actual house, rather than the drawing, is in the use of a full, four story tower, although he tops it with the roof from the drawing, not from the house.

A comparison of the Holly and Bigelow floor plans reveals similarity in the basic division of the interior space. Although the main stair is shifted in Holly to the left side of the hall, and the service wing is shifted to the left side of the back of the main block of the house, the arrangement of the rooms is generally consistent between the two.

The relationship of the Holly house to Briggs is perplexing. The book was not published until 1863, but the author states in a preface dated January 1, 1863 that the work was fully prepared for the press two years before, when its publication was delayed by the outbreak of the Civil War. In the description of Design #10, Holly refers to the illustration as depicting a house he designed and built for J. D. Bedford at Nyack on the Hudson. The Bigelow house was apparently built in 1858, the Holly-Bedford house by 1861.

That the influence could have flowed from Holly to Briggs does not seem possible in this case. The Bigelow house clearly grew out of the five drawing series of facades, employing pattern books for decorative elements but displaying characteristic Briggs massing and independence of interior arrangement. The Holly design's similarity to both Briggs's Tudor drawing and Bigelow's house indicates his work postdated that whole project. Holly combined and adapted the exterior elements, but unlike Briggs he largely copied the interior arrangement as well.

A possible link between Briggs and Holly is Paul Schulze, who drew the lithographs for Holly's books.[18] Schulze was listed in the Boston directories in 1850 as Paul Schultze, and every year after that through 1858 as Schulze, architect. He was a German immigrant, and designed two buildings for Harvard University, both built in 1857, in a South German Romanesque style.[19] If Briggs's interest in historic European styles was increasing at this time, as reflected in his Bigelow project, Romanesque buildings by a local architect might have been particularly interesting to him. No documentary connection between the two architects has been found, but both Briggs and Schulze maintained downtown Boston offices and it seems likely that they would have at least known of each other. In any case, Schulze left Boston after 1858, the year the Bigelow house was built, and by 1861 had completed Holly's lithographic stones. The appearance in Holly's work of a house so similar to Briggs's design and to the actual Bigelow residence suggests that Schulze brought more to Holly than skills in lithography.

A house Briggs designed in 1859 for Horace Abercrombie of Braintree, Massachusetts (Figure 24) shows a final example of Briggs's use of the pattern books. The design resembles #22 from Downing's *Architecture of Country Houses* in several features, particularly in overall massing, and in the placement and general types of the windows (Figure 25). However, Briggs was presumably designing for wooden construction, rather than the stone of Downing's example. He takes advantage of the greater ease and economy of wooden construction by stretching the tower an extra floor in height, adding another bay window, and making the decoration considerably more elaborate. Only in the quoins and the pilastered,

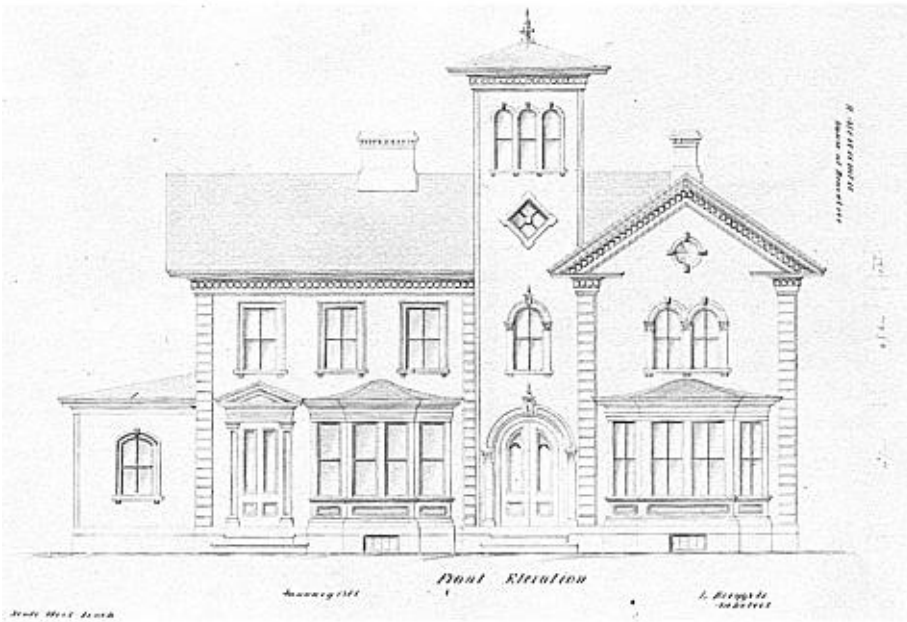


FIG. 24. FRONT ELEVATION OF A HOUSE FOR HORACE ABERCROMBIE, by Luther Briggs, January, 1860. (Photo SPNEA.)

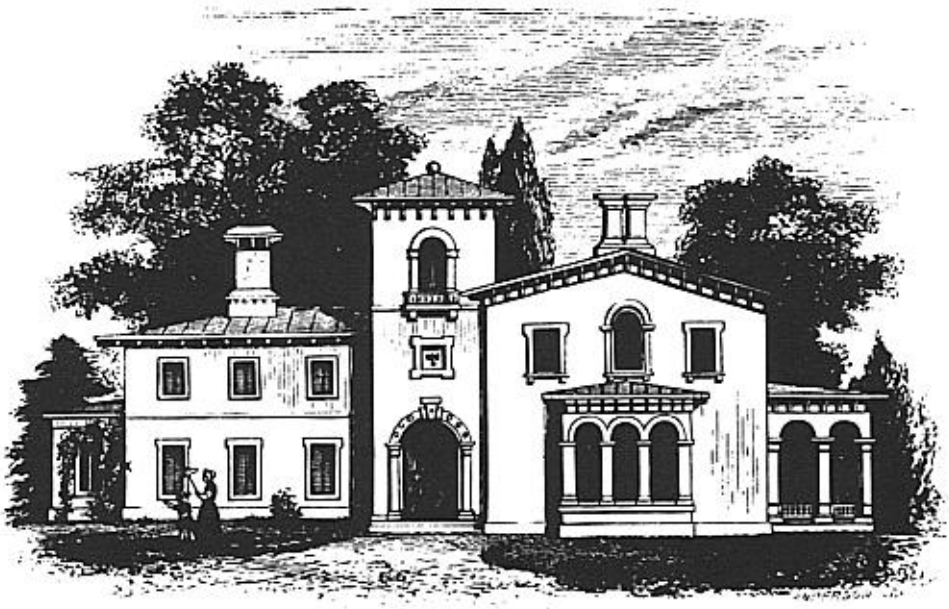


FIG. 25. "VILLA IN THE ITALIAN STYLE," DESIGN XXII from A. J. Downing's *Architecture of Country Houses,* 1850.

pedimented doorframe to the right do these added ornaments hark back to Briggs's earlier training, the rest are variations of common pattern book decorations.

With the Abercrombie project, the examples of direct reliance by Briggs on pattern books end. Some elements of his later designs are reminiscent of specific pattern book sources, but the minor role such elements play, and the overall confidence of his handling of decoration suggest that Briggs had fully assimilated the forms and motifs of the pattern book styles into his architectural vocabulary.

The known examples of Briggs's use of architectural pattern books as sources for his designs span thirteen years early in his career. (Briggs carried on an active practice into the 1880's, and worked as a consulting architect until his death in 1905.) The "Rural Gothic" cottage case represents Briggs's closest copying of a published design, but demonstrates as well his readiness to combine elements from more than one source, his willingness to modify the published designs to fit his own decorative and structural goals, and the independence of his interior design. With the Merriam project Briggs began designing pattern book-like houses for his residential clients.

The Bigelow project combined Briggs's most varied single series of exterior designs with his most extensive use of pattern book sources. With the interior arrangement of the house and the general exterior massing already established, Briggs turned to Downing and Vaux for general styles and specific decorative elements, combining and adapting their designs and adding his own elements.

Briggs's training as an engineer, as a draftsman, and as a competent structural architect apparently was thorough, but probably prepared him little for the shift in taste in domestic architecture from the Greek Revival to the eclectic, picturesque styles that coincided with the beginning of his practice. In the late 1840's or early 1850's Briggs turned to Downing to update his designs. By the time of the Bigelow project, he was able to confidently apply a variety of stylish exteriors to a basic design, freely combining and adapting elements from several different published sources. For Briggs, the picturesque pattern books were tools for mastering a new taste, and once he had mastered it, his direct use of the published designs ended.

Notes

[1] Lloyd Vernon Briggs, *History and Genealogy of the Briggs Family* (Boston: Charles Goodspeed and Company, 1938), V. 1, p. 390; V. 2, p. 583.

[2] "Luther Briggs," obituary in *1906 Annual Report of the Massachusetts Charitable Mechanic Society.*

[3] L. V. Briggs, *op. cit.*, v. 2, p. 583.

[4] Allen Johnson, ed., *Dictionary of American Biography* (New York: Charles Scribner's Sons, 1964), V. 7, part 1.

[5] Talbot Hamlin, *Greek Revival Architecture in America* (New York: Dover Publications, Inc., 1964), pp. 99-100.

[6] "Luther Briggs, Architect, Engineer & Surveyor . . ." Broadside advertisement; (Boston: 1870); collection of the Pembroke Historical Society.

[7] Charitable Mechanic Society, *op. cit.*, p. 51.

[8] S.P.N.E.A. has several drawings from that competition, including ones signed by R. Bond and Ammi B. Young. All depict small, Gothic chapels.

[9] Letter from Luther Briggs, Pembroke, to L. Briggs, Jr., Boston, May 25, 1844; collection of the Pembroke Historical Society.

[10] Letter from Joseph C. Howard, Nashua, (N.H.?), to L. Briggs, Jr., c/o Capt. Parris, Boston, April 25, 1845; collection of the Pembroke Historical Society.

[11] Charitable Mechanic Society, *op. cit.*, p. 51.

[12] "Luther Briggs . . ." broadside, *op. cit.*

[13] *Boston Directory*, 1848-1849, p. 46.

[14] *Boston Directories*, 1846-1852.

[15] Briggs might have adopted the French doors from the John Angier House in Medford, Mass., built from A. J. Davis designs in 1842. Downing depended heavily on Davis for architectural ideas and actual designs, and Designs #2 and #4 are derived from Davis plans like the Angier House.

[16] Charitable Mechanic Society, *op. cit.*, p. 51.

[17] A. J. Downing, *Architecture of Country Houses* (New York: Dover Publications, Inc., 1964; reprint of 1850 D. Appleton and Co., New York publication), p. 257.

[18] Henry H. Holly, *Holly's Country Seats* (New York: 1863), preface.

[19] Henry R. Hitchcock, *Architecture of H. H. Richardson and His Time* (Cambridge: The MIT Press, 1966), p. 22.