

# KEEFE & WESNER ARCHITECTS, P.C.

ARCHITECTURE & PLANNING

*This is a preliminary diagnostic report on conditions available to visual inspection at the time of our site visit; it is not a specification, and should not be used as a basis for contractor bids. Bid Documents contain substantially more information on quantities, standards, schedules, details and conditions of the work, which guide and protect both the Owner and the Contractor.*

*This re-assessment was partially funded by a grant from the Preservation Trust of Vermont and by the author.*

July 15, 2015

Mrs. Lillian Willis  
PO Box 318  
699 Depot Street  
Chester, VT 05143

Dear Ms. Willis:

As requested we re-visited the Yosemite Firehouse on Friday June 19, 2015 to examine and document existing conditions of the building, and to prepare this diagnostic report. Our findings are summarized below; conditions reported are those available to visual inspection at the time of our visit. Please note that while this report contains recommendations for repairs, it is not a specification for bidding; specifications contain substantially more information on quantity, quality and materials that both assist and protect you and potential bidders in carrying out repairs to your historic building.

The Firehouse was assessed in September 2000; subsequently our firm was asked to provide Specifications for Bidding for high-priority work on the hose tower, cupola and main roof in 2003, and this work was carried out in 2004 under supervision of Chris Curran (then president of the CHS) – we were not asked to visit or inspect the building as part of that repair project or since. We have also reviewed a March 2015 Report by Hugh Henry detailing the history of the Firehouse and a brief summary of assessments and work done 2000-2004. Below is a review of the current conditions noting changes since 2000; *the 2000 Assessment is shown in italics* to distinguish it from current observations.

## **Overview**

*This charming and unusual/rare example of late 19<sup>th</sup> C. firehouse architecture is a prominent landmark on Rt. 103 between Chester and N. Chester; it is listed on the State Survey but not the National Register, and is described as a C.1870 Vernacular Second Empire style building. The mansard tower roofs are the defining stylistic characteristics; it is a fine example of a wooden building built specifically for one purpose that remains virtually unchanged and is therefore a valuable resource in understanding the history of the town and the region.*

## **EXTERIOR**

### **Roof**

*Vermont weathering green (gray) slates are nailed in place over an old, deteriorated wood shingle roof; while slates on the main roof are generally sound, this failure to remove the old roof often leads to increased maintenance costs as the old wood roof continues to deteriorate, and is particularly vulnerable to any leaks in the slate roof. Some repairs are needed now on both east and west slopes, and this will be an on-going maintenance issue. The galvanized ridge flashing is secured with rusting iron clamps, a traditional 19<sup>th</sup> C. method that requires periodic repainting. This either needs repainting now, or replacement with lead-coated copper flashing, which is the preferred flashing for slate and needs no maintenance.*

*The S. tower mansard has some slipped slates that need re-attachment; the flat top roof is impossible to inspect from the ground, but the edges look ragged and we recommend you have this (and the N. tower top roof) inspected by a roofer with a lift truck when repairs are scheduled for the main roof. Water has penetrated the soffit (west) and this usually means a roofing/flashing problem. Rusty, ragged metal flashing or roofing is visible at the edges of both upper and lower roofs. The N. roof has aluminum flashing, and may have a short-lived asphalt roof that should be replaced with lead-coated copper.*

*The E. shed roof on the addition is also impossible to see from the ground, but overhanging trees and a low pitch, along with signs of some movement, suggest that there may be repairs here, too. Unless this roof is in good condition, we recommend replacing it with standing seam or flat seam metal roofing, which will resist leaking, shed snow from the upper roof, and require little if any maintenance.*

2015: Roof plane is still quite flat; we noted 8-10 slipped or broken slates on the west which need to be repaired. I could not see the east roof except for a small patch through branches from the field to the north, but this should be checked periodically. A new lead-coated copper ridge has been installed, secured by rusty iron clamps, and a substantial area of slate in the middle of the west roof appears to have been replaced in the 2004 repairs. The rusty clamps are historic and should be cleaned off, metal-primed and painted. Portions of the slate roofing below both the hose tower and the cupola, and on the mansard roofs, are stained with rust from former ferrous metal roofing/flashing that has been replaced in 2004. As noted in the original assessment, the firehouse roofing will be an on-going maintenance issue, and should be checked annually by a qualified slate roofer and any small repairs to slipped or broken slates should be made. It would be wise to develop a good working relationship with a qualified contractor, and to put him or her on retainer to make these annual inspections and repairs. Old slate needs regular maintenance, and the 'stitch-in-time' approach is by far the most economical.

## **Chimney**

*The brick chimney projecting through the east roof, and largely obscured by the overgrown trees, has been heavily repointed with hard Portland cement mortar, which damages the relatively soft historic brick, and is missing its wash and cap. It needs to be taken down to the roofline and rebuilt, and will probably need repairs to the shaft on the interior as well. If it will be functional, a lining should be provided.*

This chimney was removed to below the roofline in 2004 and the roof opening sealed; it does not appear on the interior to be leaking, but the exterior could not be observed due to proximity to the river and trees that obscure the view. Taking the deteriorated top portion of the chimney down is the first step towards restoring it; when restoration continues, the interior shaft should be examined and repaired if needed, to provide a sound base on which to re-build the top section. If the future building use anticipates 3 or 4 season occupancy a chimney may be needed to serve heating equipment; before this chimney can be used it will need to be evaluated for code compliance, and will at minimum need a complete/intact flue liner. For the moment it is stable and requires no additional work.

## **Woodwork/Siding/Paint**

*Flat casings, corners, friezes and facias are subtly enriched by crown and bed moldings on the cornices and at the frieze/soffit junction. The crown moldings on the towers need some repairs, and clapboards are deteriorated at the bottom of the west wall. The east addition is settling slightly and beginning to pull away from the main building, opening a thin v-shaped crack that needs to be sealed once the movement is stabilized. Some fasteners in the siding are rusting through; they should be sanded & primed with an anti-rust primer prior to repainting.*

*Paint is alligatoring on some of the wood siding and trim, a sure sign that the paint has reached the limit of thickness, and must be removed down to sound paint or bare wood if new paint is to adhere. The National Parks Service has an excellent publication on this subject ([Preservation Brief #10: Exterior Paint Problems on Historic Woodwork](http://www2.cr.nps.gov)) that is available on-line at <<[www2.cr.nps.gov](http://www2.cr.nps.gov)>>. It explains in detail, with illustrations, the various stages of paint deterioration and the appropriate methods of repair, making clear that successful painting is not an amateur's game.*

Woodwork on the hose tower and cupola has been repaired in the 2004 project and appears generally sound, but outside corners at the cornices are beginning to open at the crown molding miter joint, exposing vulnerable end grain. While access is difficult and expensive, this is a classic small repair that will become a larger one if not addressed reasonably soon. These joints can be caulked with a high-quality long-lasting elastomeric paintable urethane caulk (e.g. Sikaflex 1a) and re-painted. Window sills on the tower windows appear to have lost paint and look rough; this should be inspected with a lift or ladder to determine the extent of deterioration.

Other conditions are similar to those noted in 2000; no repairs or painting appears to have been done below the eaves. Wood trim in the splash zone above the east shed

roof appears to be showing signs of deterioration; again, this is a very difficult place to see from the ground, and closer inspection should be done to determine the extent of repairs. It may be possible to get assistance from the Fire Department in use of ladders or lifts to inspect this more closely, as has occurred in other towns. Wood trim and siding, and even lower windows on the west are experiencing accelerated deterioration from snow and splash from the road that is less than 5' from the building. Wood barriers leaning against the lower west wall help a little, but are not continuous, or sealed, and may actually impede drying out. They should be removed May-October. Siding and trim, and the lower half of the ground floor window sash and casings are all in advanced states of deterioration, with almost all paint worn off, and cracks and splits in the wood and rusting fasteners in some locations.

Various suggestions have been made for some type of removable temporary continuous covering on the west side – something like a tarpaulin secured in place but easily removed once the snow is gone. Unless and until the building can be moved to a new location, this makes sense. If undertaken, it is important to place any fasteners in such a way that they don't damage historic materials, and are fully reversible when no longer needed.

Paint failure continues unabated on the siding and trim, and there are increasing amounts of bare wood exposed to sunlight and UV radiation damage. New lead paint rules will require more care in containing and collecting paint chips and dust, and the lack of clearance from a very active State Highway will mean extreme caution and some creative access measures. In the event that the full prep and re-painting work cannot be carried out soon, it may be advisable to do some stabilization painting; this would entail a scaled-down preparation phase with scrapers and wire brushes to get the majority of loose material off, and application of paint to any exposed bare wood, to protect it while funding for the full paint job is being secured. It is not meant to be aesthetic, just functional; tinting the repair paint (primer) to roughly match the existing color will result in a more workmanlike looking stabilization. It can buy a couple of years for a few thousand dollars, but should not be relied on for longer than this.

## **Doors and Windows**

*This vernacular Victorian building has vertically proportioned windows in keeping with its overall vertical emphasis. All of the windows in the body of the main building are 6/6 wooden double-hung sash; one on the north side is missing one sash, several have damaged stops, and all have deterioration on the horizontal wood sills and paint failure to varying degrees. All need sash conservation (see Pres. Brief #9: The Repair of Historic Wooden Windows) to return them to good working order. The 2/2 sash in the addition have similar repair needs.*

*In the north (hose) tower there are 4 small double-hung dormer windows(1/1) with aluminum storms that appear to need sash conservation as well; a dead bird sandwiched between inner and outer glazing suggests that some tightening up is in order. The south tower has 4 rectangular wooden louvered vents that appear to be in good condition.*

*The large wooden sliding door at the south end of the engine bay has rusting fasteners and alligatored paint; the vertical plank door on the west needs minor paint repairs.*

Several windows on the east shed-roofed addition are 1/1 wood double-hungs; all windows are still in urgent need of sash conservation. The beaded plank door on the west has its wooden sill at grade, and the door and casings/sill/jambes continue to deteriorate from snow splashed and plowed against the west side of the building. The suggestion to add a man-door in the sliding barn door on the south is a good one; the current west door has a problematic lock, and poses a safety risk simply to use it. Specified sash repairs in the tower somehow resulted in replacement of these sash in 2004, in spite of specific instructions in the Bid Documents to repair them. This should be avoided in future window repair work on the Firehouse; while it may be cheaper to replace them, their value as historic fabric outweighs that. Some form of temporary removable storms would benefit these relatively fragile components, but would require manpower and budget that don't appear to be available. A shorter than usual maintenance cycle should be instituted once they are repaired – say, every 3 years instead of 4 or 5.

### **Foundation**

*The original stone foundation has been over-coated with concrete, causing it to project beyond the plane of the upper walls; this shelf creates a splash that is deteriorating the wall in the splash zone, especially on the west. Short of rebuilding the wall, there is little that can be done other than to increase paint maintenance on all wood in the affected area.*

*Three concrete piers on the east support the east addition six feet or so above grade; these piers have begun to lean downhill/east, probably due to a combination of settlement (abetted by storm water drainage) and inadequate depth and footing design of the piers. We could not determine definitively whether this section is contemporaneous with the main building (in which case it has been re-supported with the concrete piers), or whether it is a later addition, and always sat on the piers. Most likely it is an addition, as the old exterior clapboard wall is now the interior finish on the west wall of the addition room.*

*In any event, the piers will need replacing or substantial reinforcing to halt the rotation occurring now; an investigative excavation should reveal whether the footings and depth below grade are adequate to reinforce. Once this is stabilized, the opening between sections caused by displacement can be sealed; it's unlikely that jacking will close this gap much.*

Surprisingly very little has changed since 2000 despite a '500-year' storm and several other major flooding storms in the past 5 years; displacement has not increased on the concrete piers under the east addition, and the degree of separation where the top of the shed addition is pulling away is the same. The rest of the foundation under the firehouse appears stable; we noted lead flashing between the wood sill and the concrete foundation on the east, which is probably acting as a damp-proofing course.

## **Site**

*The building sits a few feet off of Vt. Route 103 – probably within the State Right-of-Way- hemmed in on the east by the William River; the site slopes east to the river, somewhat steeply on the north, precipitously on the south. Drainage around the building appears adequate; there is a ‘new’ (c.1960?) concrete retaining wall along the east edge of the parking/drive area on the south, presumably installed to halt the river’s erosion towards the building and the road. Trees growing on the east side are overgrown against and over the east addition, and should be cut back, or removed. The makeshift wooden railing along the edge of the retaining wall is unsafe.*

Conditions remain the same. We noted that the power lines running between the building and the road (they jump across the road at the building and immediately back again on either side) would pose a significant challenge in moving the building. The concrete retaining wall appears to be protecting the building and the small space on the south in front of the sliding door. Trees to the east need regular pruning to keep them away from the roof and to allow the building to dry out. The inherent problem of this site – too close to a major highway and the river, with many impediments to carrying out proper maintenance –has no realistic solution, and – if current progress in repairs is any indication - it is our opinion that the building needs to be moved in order to ensure its survival.

## **INTERIOR**

### **Main Floor**

*While interior issues are by nature a lower priority than exterior repairs, since they are not exposed to the weather and rapid deterioration, we did make a quick tour of the interior to determine that there were no significant problems; below are our abbreviated comments.*

*The **main garage** has a concrete floor, beaded board walls and ceiling, a center beam, and a woodstove brick chimney with a deteriorated plaster finish. All finishes except the plaster are rough but serviceable. A hot air furnace is located in the north alcove, with an unenclosed oil tank in the opposite alcove.*

*The **east storage room** in the adjacent east addition has unpainted beaded board walls and ceiling; the west wall is the original exterior clapboard finish on the firehouse, strongly suggesting that the addition came later. A small **privy** on the south end of this space is utilitarian, and appears to have utilized the river as a sanitary disposal system. The **hose tower** is a 5 ½ story 7’X7’ shaft sheathed in horizontal matched or beaded boards for 2 stories, with flat casings on the windows and door. Wooden rollers on the head jamb allow hoses to be fed into the tower from the truck, and hoisted up with lines that are attached to the wooden pulleys on cross-bars at the top. The 4-panel door has contemporary hardware. This space is well-preserved and clearly demonstrates the function that dictated its form.*

The **stair enclosure** on the NW has horizontal beaded board walls, with plaster walls and ceiling on the upper level, and plain wooden stairs with a paint finish.

## **Second Floor**

The **meeting room** has a nailed pine floor that looks newer than the building, and painted plaster walls and ceiling, with a chair rail and tall baseboard. A plaster medallion is centered on the room. Hot air ducts are cut into the floor; a pot-bellied stove and piano are the principal features of the room. Paint is peeling from the flat casings; one pane of a 6/6 sash is broken. Jamb stops need some adjustment/repair.

In the **east room** are a kitchen wood-burning range and a rough sink; the walls and ceiling are covered in beaded boards. Bullet holes in the window facing the field point up one of the risks faced by this underutilized historic resource. A **pantry** on the north has plaster walls and ceiling, with some paint failure evident, an unfinished pine floor, built-in cabinetry, and a (inaccessible) hatch to the attic.

Conditions on the interior are essentially unchanged; 8-10 s.f. of water-damaged plaster at the chimney on the 2<sup>nd</sup> floor has failed and fallen on the floor, but the leak has been addressed with the shortening of the chimney in the 2004 repair work.

On this visit I was able to access the ships ladder to the **attic**, which is unfinished with exposed sawn framing including 2" x 7" rafters @ 22" o.c. at a 9.5 in 12 pitch, with a board ridge and board sheathing. The old wood shingle roofing under the slate is visible in cracks between the sheathing boards. The truncated chimney is visible below the roofline on the east. A rickety wood stair at the south end provides access to the cupola which is almost entirely filled with the 28" cast bronze William Blake bell and wooden rope wheel supported on a cast iron cradle anchored to 5" x 10" bell bunk timbers. There were no signs of current roof leakage in the belfry or the main roof.

## **PRESERVATION STRATEGIES AND COSTS**

*This is a unique and fascinating building in generally good repair, built of good-quality materials and needing some standard repairs including roofing/flashing, chimney work, windows and painting, and a standard amount of routine maintenance. High priority repairs should be carried out as soon as possible, with lesser priority work following as soon as resources permit. The goal is to get the building back to a condition where no repairs are needed, only routine cyclical maintenance.*

*As always, these opinions of probable cost are advisory only; they are not based on specifications or full research, and are meant to indicate an "order of magnitude" cost for the items listed in order of priority below.*

### **High Priority**

New lead-coated copper ridge flashing	2500-3200.
Slate repairs (main roof & tower)	2600-3300.
Tower high roofs (2)	Allow 2500.
Tower low skirt roofs (2)	Allow 2000.
East addition roof repairs	Allow 750.

Cut trees on east	500.
Chimney – rebuild from roofline and interior repairs	3200-3800.
Stabilize/reinforce east addition foundation	Allow 2800.
Sash conservation (worst half=10 @ \$275)	<u>2750.</u>
Subtotal:	\$19,600 – 21,400.

**Medium Priority**

Woodwork repairs	Allow 1000.
Prep/paint exterior including windows/doors	15,000 – 19,000.
Sash conservation (other half = 9 @ \$275)	2500.
Repair (2) doors	<u>600.</u>
Subtotal:	\$19,100 – 23,300.

**Low Priority**

Restore signs	<u>850-1000.</u>
Subtotal:	\$850-1000.

Total: \$39,550 – 45,700.

These costs are substantially out of date and no longer relevant in a changed marketplace. Work remaining from the previous assessment includes chimney reconstruction, stabilization of the east addition foundation, tree pruning, on-going maintenance of slate roofing, sash conservation of all windows, door repairs, woodwork and siding repairs and painting of all exterior woodwork and siding below the roof. Order-of-magnitude costs for these are prioritized below:

Slate roof maintenance repairs (annual)	Allow	\$800-1,000.
Repair all siding and trim	“	3,000-4,000.
Prep and paint (everything below the main roof)	“	35,000-40,000.
Sash conservation and door repairs	“	25,000 – 30,000.
Replacement of E addition foundation	“	5,000 – 6,000.
Re-build chimney above roofline + int. repairs	“	4,000 – 6,000.
Prune trees on east	“	<u>900-1,200.</u>
Total		\$73,700 – 88,200.

**Conclusion**

*This charming historic landmark firehouse has stood in its present location for over a century, and is a community fixture that is eminently worthy of preserving. Deferred maintenance to roofing, flashing, chimney and windows, and a moderate structural weakness in the addition all need to be addressed; most of this work will require craftsmen with specialized expertise in repairing historic materials.*

*A comprehensive plan for the use and maintenance of the building that addresses the need for periodic maintenance should be developed to organize records and anticipate future needs, avoid costly repairs, and utilize the best methods and materials available*



*from a growing body of research and experience with historic building maintenance. The Preservation Briefs referenced here will assist you in addressing these maintenance needs, and should be a part of the plan.*

## **Relocation and Stewardship**

Serious consideration should be given to moving this building to a location where it can be properly maintained and used as a community resource; whether it can survive as a small historical society museum in today's economy is a bigger question than this assessment can address, but it clearly cannot survive in its present location where maintenance would be very difficult and expensive even if funds were available. The ownership of the building also needs to be resolved, since grants, authority to work on the building, and certainly authority to move it rest on this issue. The 2004 repairs helped tremendously in keeping the historic resource intact, by repairing the most difficult and hard to access elements; the work appears largely sound (appropriate materials and skilled workmanship) aside from the unfortunate window replacement. There is still much to be done, and the deferred maintenance is resulting in loss of historic fabric, increase in costs to repair, and may also contribute to a public perception that this is not a significant enough resource to merit the effort and funding necessary to ensure its survival. It is a unique and noteworthy building, and a strong character-defining element of Chester – one of the most photographed buildings in a town full of remarkable and picturesque buildings.

Recent major storms have made clear that the adjacent field is in the flood plain and almost certainly not a candidate for relocation, assuming that the landowners would even agree to such a move. Power lines will create a serious impediment to moving a building with two vertical elements nearly 60' high, as will the adjacent State Highway – a major east-west thoroughfare in central Vermont. Cooperation between the Town, Historical Society, Division for Historic Preservation, VTRANS and probably several other entities, including a landowner with a suitable site, will be critical to the success of this process. This is an historic building worthy of that effort.

Sincerely yours,



Thomas F. Keefe, Architect  
Keefe & Wesner, Architects, PC  
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Encl./