



HISTORIC SITE PRESERVATION BOARD STAFF REPORT

DATE: July, 2014

OLD BUSINESS

SUBJECT: A CERTIFICATE OF APPROVAL REQUEST BY THE CITY OF PALM SPRINGS FOR STABILIZATION AND REHABILITATION OF THE EXTERIOR OF THE CORNELIA WHITE HOUSE, A CLASS 1 HISTORIC SITE LOCATED AT THE VILLAGE GREEN PARK (221 SOUTH PALM CANYON DRIVE) HSPB #4, (ZONE CBD) AND A CATEGORICAL EXEMPTION PURSUANT TO CEQA.

FROM: Department of Planning Services

SUMMARY

On May 8, 2012 the HSPB voted 6-0 to grant a Certificate of Approval for repairs to the Cornelia White House and re-design of the landscape immediately adjacent to the house in order to stop water damage to the structure that has been caused by irrigation sprayers in the adjacent lawn. A portion of the approved repairs have been implemented including replacement of the roof. The current certificate of approval is seeking approval of an alternative approach from what was previously approved for stabilization and repairs for the perimeter walls of the structure.

At its June 10, 2014 meeting the HSPB considered the proposal put forth by the City to stabilize the Cornelia White House by a "wrap and protect in place" approach. The Board considered the application and took two actions:

1. It restated the Board's approval of the 2012 landscape design to remove irrigation spray from damaging the building and replace the grass and flowers with a drought tolerant landscape more reflective of that which may have existed around the Cornelia White house during the time period in which was constructed, and
2. It requested the City to explore an approach that would remove and replace deteriorated elements of the house on a "piece by piece" basis.

RECOMMENDATION:

1. Approve the certificate of approval for the "wrap and protect-in-place" stabilization approach as was described and recommended in the June 10, 2014 staff report.
2. Recommend that the City allocate funds for a more comprehensive "forensic" investigation into a long-term solution for the restoration of the Cornelia White House.

ISSUES:

Staff believes the piece-by-piece approach may result in more irreparable damage to the historic integrity and material components of the original structure than the “wrap and protect-in-place” approach previously recommended by the applicant.

BACKGROUND AND PREVIOUS ACTIONS:

<i>Related Relevant City Actions by Planning, Fire, Building, etc.</i>	
September 5, 1984	City Council designated the Cornelia White house as a Class 1 historic site (CC Reso 15215)
June 13, 2000	HSPB approved certificate of approval for construction of a patio between the White house and McCallum Adobe.
July 7, 2002	Staff approval of replacement door to courtyard with 10-panel wood and glass “French” door. (appears was not installed as approved).
December 14, 2010	HSPB approved a Certificate of Approval for replacement of the signage at the Cornelia White house.
April 12, 2011	HSPB approved Certificate of Approval for replacement of the roof.
September 13, 2011	HSPB approved Certificate of Approval for re-placing an existing wood sign.
May 8, 2012	HSPB approved Certificate of Approval for numerous repairs, and rebuilding of deteriorated components, including approval of a revised landscape plan, removing the grass and spray nozzles from the area immediately adjacent to the structure.
2014	City Council allocates \$50,000 of Measure J funds toward the stabilization and rehabilitation of the Cornelia White house.
June 10, 2014	HSPB votes to restate previously approved landscape plan and seek more information from the consultant for consideration of a “piece-by-piece” approach to restoration of the house.

ANALYSIS:

As requested the City’s consultant has provided a scenario for a “piece-by-piece” approach to repair and restoration of the Cornelia White House (see Young to Lyon letter dated June 26, 2014 with attachments).

As noted in his letter, the consultant continues to recommend the “wrap and protect-in-place” approach to stabilization of the house.

Review of the proposal against the Historic Preservation Ordinance.

There are no specific findings required for Certificates of Approval, however, pursuant to Municipal Code Section 8.05.190, the Board shall consider the following in reviewing and acting upon a certificate of approval application:

- (1) The historic value and significance, or the architectural value and significance or both, of the structure and its relation to the historic value of the surrounding area;

The historic significance of the Cornelia White House is documented in previous staff reports. The historic and architectural value of the structure lies in its unique use of railroad ties for the exterior walls and other salvaged materials for roof sheathing (which were found to be slats from old packing pallets) and other components. On the interior, the unique coffered and vaulted ceilings are also significant. Also significant is that the house may be the second oldest extant structure in Palm Springs.

The cutting and patching “piece by piece” of the railroad ties and the existing board and batten overlay may have unanticipated negative consequences in that it may be nearly impossible to get the patches to blend in and match the weathered grain, railroad spike holes and other “rustic” surface features of the existing structure. Furthermore, those portions of the exterior walls where the railroad ties are “faced over” with existing vertically placed board and batten, the boards are continuous, non-jointed pieces of lumber. Cutting and patching, or “splicing in” new pieces into the existing board and batten siding will create new joints in the surface into which water can seep and cause more damage. Also, because it is unknown whether the interior wall finishes (plaster) is directly attached to the back side of the railroad ties, removing selected ties, or cutting sections out may cause the interior wall surfaces to be pulled apart and damaged. Lastly, there appears to be no way to install a vapor barrier with the “piece-by-piece” approach. Without installing an effective moisture barrier, moisture that does seep, leak, migrate, or condense within the wall still be unmitigated and will continue to cause mold and degradation of the structure (the railroad ties) and the interior finishes of the building.

Staff believes the “piecework” approach is unpredictable and may cause more harm than benefit to the structure and doesn’t solve the problem of the lack of an effective vapor barrier within the wall assembly.

- (2) The relationship of the exterior architectural features of any structure to the rest of the structure itself and to the surrounding area;

As noted above, the exterior architectural features – namely the railroad ties – in much of the original house ARE the structure of the house. They may be holding up not only the roof, but the ties may also be the surface upon which the interior finishes are attached. Cutting out deteriorated parts of the railroad ties and board and batten siding may impair and damage the character-defining features of this unique house in a way that is not reparable.

- (3) The general compatibility of exterior design, arrangement, texture and material which is proposed by the applicant;

The City is proposing to “cover and protect-in-place” the existing deteriorated structure of the Cornelia White house to stabilize it and prevent further water infiltration, while leaving certain “protected” portions (i.e. at the porch) uncovered to visually convey the material significance of the structure (that is, the railroad ties) to the public. Staff

believes this is a less “invasive” approach to dealing with the deterioration of the structure than a “patching” approach, in which it will be nearly impossible to match the texture and “authenticity” of the original weathered and rustic railroad ties.

(4) Archaeological or ecological significance of the area.

The proposed project does not impact any known archaeological or ecological significance of the site.

Staff believes the previously proposed “cover and protect-in-place” approach to stabilization of the Cornelia White House meets the guidelines for granting a certificate of approval by the HSPB and is consistent with the Secretary of the Interior Standards for Rehabilitation of a Historic Structure. The “piece-by-piece patch” approach would be more invasive, untested, and could potentially cause further irreparable damage to the historic defining characteristics of the site.

Staff further believes the “cover and protect-in-place” scheme “buys time” for more sufficient investment (funds and time) by the City or outside agencies to conduct more comprehensive “forensic research” on the Cornelia White house. Stabilizing the structure now would protect it from further decay and allow a more careful “museum-level” investigation and study into the best approach and intervention for the long term preservation of this unique site for the benefit of residents, tourists and scholars.

ENVIRONMENTAL ASSESSMENT

The proposed site modifications are deemed a Project under the guidelines of the California Environmental Quality Act (CEQA). Pursuant to Section 15064.5 “*Determining the Significance of Impacts on Historical and Unique Archeological Resources*”, the Cornelia White House is a “historic resource” under CEQA because it is listed in the local register of historic resources (Class 1, HSPB No. 4). The historic defining characteristics of this site include the railroad tie construction, and the original board and batten siding of the circa-1914 addition, the stone chimney, and the interior vaulted ceilings. The front porch, although likely reconstructed at some time in the recent past, appears to have been detailed similarly to the existing house (with mismatched scrap pieces of beaded board), thus staff believes it should be considered a defining characteristic also, as is the fieldstone foundation.

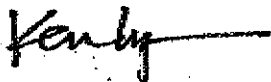
According to CEQA, a project with an effect that may cause a “*substantial adverse change*” in the significance of a historical resource is a project that may have a “*significant effect*” on that resource. “Substantial adverse change” includes alteration of the immediate surroundings of the historic resource such that the significance of the resource would be *materially impaired*.

CEQA allows for a Class 31 Categorical Exemption (*Historical Resource Restoration / Rehabilitation*) for projects involving maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of historical resources in a

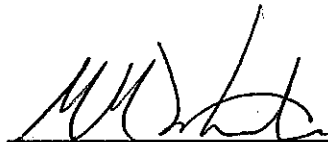
manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (1995), Weeks and Grimmer ("the Standards"). At the June HSPB meeting on this topic, staff provided excerpts from the Standards relevant to the proposed project.

The project does impact the building. The previously-proposed approach to the project stabilizes, protects-in-place, adds necessary moisture and water barriers to halt further infiltration of water and mold, and rehabilitates and repairs only minimally, the deteriorated portions of the Cornelia White house without compromising its historic integrity or causing material impairment to this historic resource. Staff therefore continues to recommend the "wrap and protect-in-place" approach for which it believes a Class 31 Categorical Exemption would be appropriate.

A "piece-by-piece" approach may cause "a substantial adverse change" or may have the unanticipated consequence to "materially impair" the significance of the historic resource or the character-defining historic elements of the building.



Ken Lyon, RA
Associate Planner



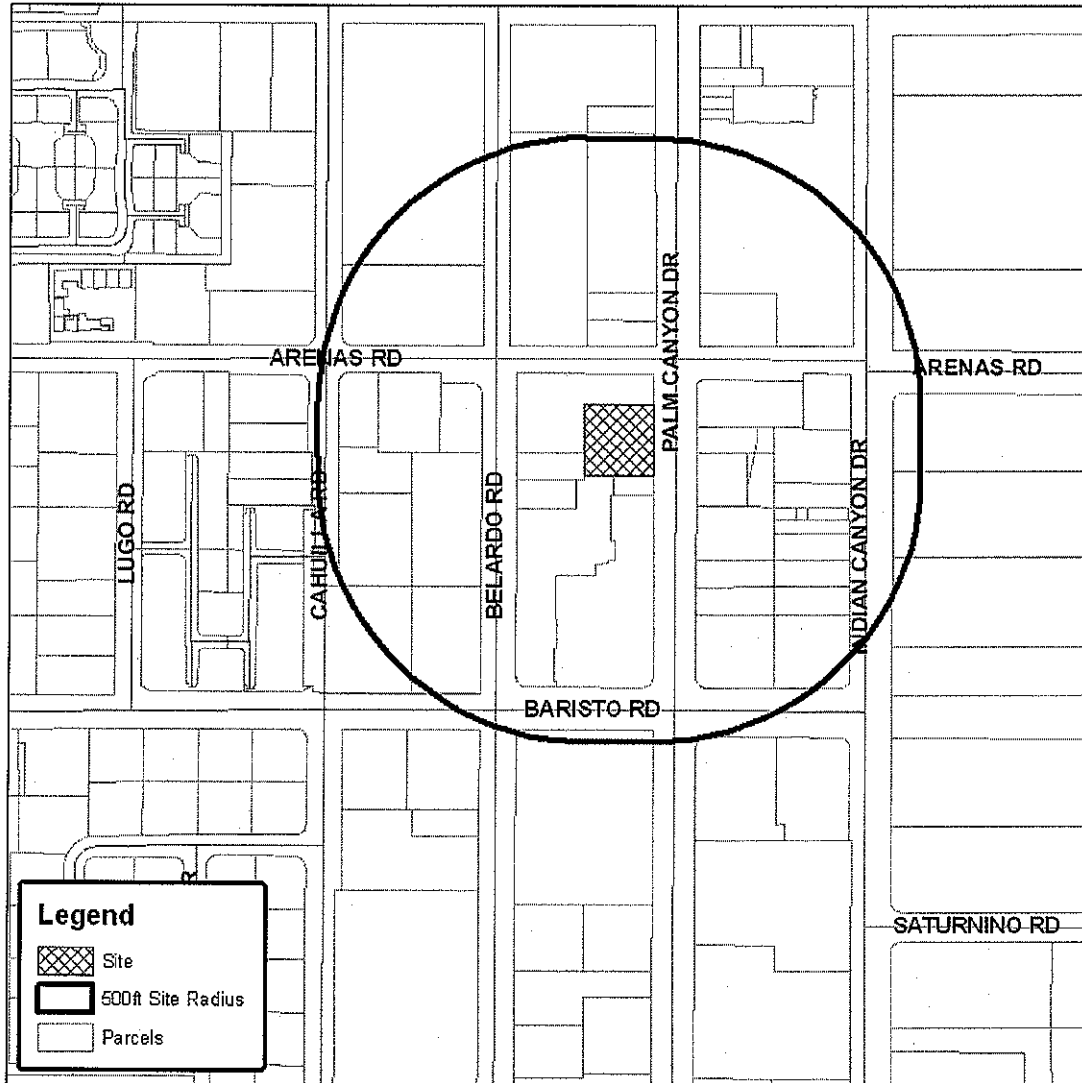
M. Margo Wheeler, FAICP
Director of Planning Services

Attachments:

1. Vicinity Map.
2. Young to Lyon letter dated June 26, 2014 with attachment on "Guidelines for preservation and treatment of American log buildings".



Department of Planning Services Vicinity Map



CITY OF PALM SPRINGS

CASE NO.: HSPB - 4

APPLICANT: City of Palm Springs

DESCRIPTION: A Certificate of Approval for the stabilization and rehabilitation of the Cornelia White house, a Class 1 historic site located at 221 South Palm Canyon Drive at the Village Green Park, Zone CBD



PROJECT RECORD

INTERACTIVE DESIGN CORPORATION

ARCHITECTS +

199 S. Civic Drive, Suite 10

Palm Springs, California 92262

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mail@interactivedesigncorp.com

DATE 26JUN2014

TO Ken Lyon @ City of PS Planning
VIA email
FROM Reuel Young
PROJECT IDC No. 1311.3
SUBJECT Alternative approach to CWH

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DISTRIBUTION

We are proceeding with development of the above referenced project in accordance with our understanding of the material/issues noted below. Unless we receive written clarification or amendment by the third business day from the date of this project record, the following will be considered as confirmed instruction and understanding. ©

Fax:

Ken,

Based upon the comments during the 10JUN14 HSPB meeting and our recent site visit. I would like to present the Board an alternative to our original proposal to "wrap and protect" the existing building. While I still strongly recommend the "wrap & protect approach", an alternative would be as follows:

Select three partial elevations representing each of the types of wall construction, and do a removal/investigation of each of the existing systems. This approach would be piece-by-piece to give us a better understanding of the conditions that lie within the walls and the true construction method and materials.

We propose to address a defined section (See attached Sheets 1.alt and 2.alt) so that in the process of removing/repairing/replacing we can add the weather barrier and weep screed that will prevent further water intrusion.

This investigation/removal has the inherent danger of damaging interior finishes because in some locations we believe the interior finish is attached directly to railroad ties that make up the "structure" of the wall. Furthermore, there are some locations where the wood deterioration is so extensive that repair and/or replacement cannot be reasonably accomplished.

Because of the many unknowns, the actual work would be monitored so any work that might result in substantial damage could be halted quickly.

Respectfully,

Reuel Young

Att: Sheets 1.alt & 2.alt dated 26JUN14



PROJECT RECORD

INTERACTIVE DESIGN CORPORATION

ARCHITECTS +

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Palm Springs, California 92262

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mail@interactivedesigncorp.com

DATE 26JUN14

TO Ken Lyon
VIA email
FROM Reuel Young
PROJECT IDC No. 1311.4
SUBJECT Log repair

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DISTRIBUTION

We are proceeding with development of the above referenced project in accordance with our understanding of the material/issues noted below. Unless we receive written clarification or amendment by the third business day from the date of this project record, the following will be considered as confirmed instruction and understanding. ©

Fax:

The intent of this Brief is to present a concise history and description of the diversity of American log buildings and to provide basic guidance regarding their preservation and maintenance. A log building is defined as a building whose structural walls are composed of horizontally laid or vertically positioned logs. While this Brief will focus upon horizontally-laid, corner-notched log construction, and, in particular, houses as a building type, the basic approach to preservation presented here, as well as many of the physical treatments, can be applied to virtually any kind of log structure.



Rustic log structures were a popular choice for vacation cabins in the 20th century. Photo: Courtesy, HABS Collection, NPS.

Log buildings, because of their distinct material, physical structure, and sometimes their architectural design, can develop their own unique deterioration problems. The information presented here is intended to convey the range of appropriate preservation techniques available. It does not, however, detail how to perform these treatments; this work should be left to professionals experienced in the preservation of historic log buildings.

Despite the publication since the 1930s of a number of books and articles on the history of log construction in America, some misconceptions persist about log buildings. Log cabins were not the first type of shelter built by all American colonists. The term "log cabin" today is often loosely applied to any type of log house, regardless of its form and the historic context of its setting. "Log cabin" or "log house" often conjures up associations with colonial American history and rough frontier life. While unaltered colonial era buildings in general are rare, historic log buildings as a group are neither as old nor as rare as generally believed. One and two-story log houses were built in towns and settlements across the country until about the middle of the 19th century, and in many areas, particularly in the West, as well as the Midwest and southern mountain regions, log continued to be a basic building material



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despite the introduction of wooden balloon frame construction. By the early 20th century, the popularity of "rustic" architecture had revived log construction throughout the country, and in many areas where it had not been used for decades.



Unlike western log cabins, 18th and 19th century log houses in the eastern part of the U.S. were almost always covered with siding or stucco. Photo: NPS files.

A distinction should be drawn between the traditional meanings of "log cabin" and "log house." "Log cabin" generally denotes a simple one, or one-and-one-half story structure, somewhat impermanent, and less finished or less architecturally sophisticated. A "log cabin" was usually constructed with round rather than hewn, or hand-worked, logs, and it was the first generation homestead erected quickly for frontier shelter. "Log house" historically denotes a more permanent, hewn-log dwelling, either one or two stories, of more complex design, often built as a second generation replacement. Many of the earliest 18th and early 19th century log houses were traditionally clad, sooner or later, with wood siding or stucco.

Historical Background [return to top ▲](#)

No other architectural form has so captured the imagination of the American people than the log cabin. Political supporters of 1840 presidential candidate William Henry Harrison appropriated the log cabin as a campaign symbol. The log cabin was birthplace and home for young Abe Lincoln, as well as other national figures, and assumed by many 19th century historians to be the very first type of house constructed by English colonists. In 1893 Frederick Jackson Turner in his influential paper, "The Significance of the Frontier in American History" suggested that European colonists had adopted this means of shelter from the Indians.

More recent 20th century scholarship has demonstrated that horizontal log buildings were not the first form of shelter erected by all colonists in America. Nor was log construction technology invented here, but brought by Northern and Central European colonists. Finnish and Swedish settlers are credited with first introducing horizontal log building in the colony of New Sweden (now Pennsylvania) on the upper shores of Delaware Bay in 1638, who later passed on their tradition of log construction to the Welsh settlers in Pennsylvania.

During the 17th and 18th centuries, new waves of Eastern and Central Europeans, including Swiss and Germans, came to America bringing their knowledge of log construction. Even the



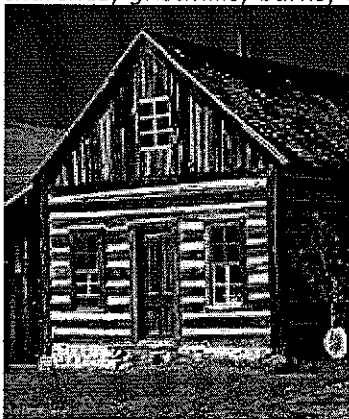
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Scotch-Irish, who did not possess a log building tradition of their own, adapted the form of the stone houses of their native country to log construction, and contributed to spreading it across the frontier. In the Mississippi Valley, Colonial French fur traders and settlers had introduced vertical log construction in the 17th century.



This lodge constructed of logs in the 1880s is an example of the Adirondack style of rustic camp architecture. Photo: NPS files.

Through the late 18th and early 19th centuries, frontier settlers erected log cabins as they cleared land, winding their way south in and along the Appalachian valleys through the back country areas of Maryland, Virginia, the Carolinas and Georgia. They moved westward across the Appalachian Mountain barrier into the Ohio and Mississippi River valleys transporting their indispensable logcraft with them, into Kentucky and Tennessee, and as far to the southwest as eastern Texas. Log buildings are known to have been constructed as temporary shelters by soldiers during the Revolutionary War, and across the country, Americans used logs not only to build houses, but also commercial structures, schools, churches, gristmills, barns, corncribs and a variety of outbuildings.



The entrance door centered in the gable end in this late-19th century log building is a typical feature of the Rocky Mountain Cabin style. Photo: NPS files.

Around the mid-19th century, successive generations of fur traders, metal prospectors, and settlers that included farmers and ranchers began to construct log buildings in the Rocky Mountains, the Northwest, California, and Alaska. In California and Alaska, Americans encountered log buildings that had been erected by Russian traders and colonists in the late



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18th and early 19th centuries. Scandinavian and Finnish immigrants who settled in the Upper Midwest later in the 19th century also brought their own log building techniques with them. And, many log structures in the Southwest, particularly in New Mexico, show Hispanic influences of its early settlers.

While many parts of the country never stopped building with logs, wooden balloon frame construction had made it obsolete in some of the more populous parts of the country by about the mid-19th century. However, later in the century, log construction was employed in new ways. In the 1870s, wealthy Americans initiated the Great Camp Movement for rustic vacation retreats in the Adirondack Mountains of upstate New York. Developers such as William Durant, who used natural materials, including wood shingles, stone, and log—often with its bark retained to emphasize the Rustic style—designed comfortable summer houses and lodges that blended with the natural setting. Durant and other creators of the Rustic style drew upon Swiss chalets, traditional Japanese design, and other sources for simple compositions harmonious with nature.



Old Faithful Inn, Yellowstone National Park, Wyoming brought the Rustic style to the West in 1903 in an original design, and a scale befitting its setting. Photo: Courtesy, Historic American Buildings Survey, NPS.

The Adirondack or Rustic style was balanced in the West with construction of the Old Faithful Inn at Yellowstone National Park in Wyoming, designed by Robert C. Reamer, and begun in 1903. This popular resort was tremendously influential in its use of locally-available natural materials, especially log, and gave impetus to Rustic as a true national style. From the turn of the century through the 1920s, Gustav Stickley and other leaders of the Craftsman Movement promoted exposed log construction. During the 1930s and 40s, the Civilian Conservation Corps (CCC) used log construction extensively in many of the country's Federal and State parks to build cabins, lean-tos, visitor centers, and maintenance and support buildings that are still in service.



Historical Evaluation and Damage Assessment [return to top ▲](#)

Before undertaking preservation work on a historic log building, its history and design should be investigated, and physical condition evaluated. It is always advisable to hire a historical architect or qualified professional experienced in preservation work to supervise the project. In addition, State Historic Preservation Offices, regional offices of the National Park Service, and local historical commissions may also provide technical and procedural advice.

The historical investigation should be carried out in conjunction with a visual inspection of the log building. Physical assessment needs to be systematic and thorough. It should include taking notes, photographs or video recording, and making drawings of existing conditions, including overall and detail views. This will serve as a record of the appearance and condition which can be referred to once work is under way. A physical assessment should also identify causes of deterioration, not just symptoms or manifestations and, in some instances, may need to include a structural investigation.

Preservation Treatments [return to top ▲](#)

Since excessive moisture promotes and hastens both fungal and insect attack, it should be dealt with immediately. Not only must the roof and gutters be repaired—if none exist, gutters should probably be added—but the foundation grade should be sloped to ensure drainage away from the building. If the distance from the ground to the sill log or exterior sheathing is less than eight inches, the ground should be graded to achieve this minimum distance. Excess vegetation and debris such as firewood, dead leaves, or rubbish should be cleared from the foundation perimeter, and climbing vines whose leaves retain moisture and tendrils erode daubing, should be killed and removed. Moisture problems due to faulty interior plumbing should also be remedied. Solving or reducing moisture problems may in itself end or halt the progress of rot and wood-destroying insects.

Log Repair [return to top ▲](#)

Stabilizing and repairing a log that has been only partially damaged by decay or insects is always preferable to replacing it. Retaining the log, rather than substituting a new one, preserves more of the building's integrity, including historic tool marks and the wood species which may no longer be obtainable in original dimensions. Log repair can generally be done with the log in place at less cost, in less time, and with less damage to building fabric, than by removing, and installing a new hewn and notched replacement log. Log repair is accomplished by two basic methods: traditional methods of splicing in new or old wood, or through the use of epoxies. These treatments are sometimes combined, and may also be used in conjunction with reinforcing members. Historic log repair, whether it involves patching techniques or the use of epoxies, should always be performed only by an experienced craftsperson or architectural conservator.



Wood Splicing

Wood splicing can involve several types of techniques. Also referred to as "piecing-in" or "Dutchman" repair, it involves treating a localized area of deterioration by cutting out the decayed area of the log, and carefully carving and installing a matching, seasoned wood replacement plug or splice. The wood species, if available, and the direction and pattern of the grain should match that of adjacent original wood. The location and depth of decay should determine the splicing technique to be used. In a case where decay runs deep within a log, a full-depth segment containing the affected area can be cut out, severing the log completely, and a new segment of log spliced in, using angled "scarf" joints or square-cut "half-lap" joints. The splice is secured to the severed log by angling lag screws or bolts through the upper and lower surfaces that will be concealed by daubing.

Splicing can also be performed using epoxy as an adhesive. A log with shallow decay on its outer face can be cut back to sound depth, and a half-log face spliced on, adhered with epoxy, screws or bolts. A technique for the repair of badly deteriorated log crowns involves cutting them back to sound wood, and into the notching joint if necessary, and installing new crowns cut to match. Fiberglass or aluminum reinforcement rods are inserted into holes drilled into the new crowns, and into corresponding holes drilled in the ends of the original cutoff logs. Epoxy is used as an adhesive to attach and hold the new crowns in place. Long lag screws can be angled up through the underside of the crown into the log above to provide additional support for the repair.

Epoxy Consolidation and Repair

In some instances, epoxies may be used by themselves to consolidate and fill the voids left by deteriorated wood. Epoxies are versatile in performance, relatively easy to use by experts, and, after curing, may be shaped with woodworking tools. Their use requires that sufficient sound wood survives for the epoxy to adhere. But they can be used to stabilize rotted wood, return full or greater than original strength to decayed structure-bearing members, and to reconstitute the shape of decayed log ends. Epoxies resist decay and insects, and while epoxy itself is resistant to moisture, epoxy tends to cause adjacent wood to retain moisture rather than dry out, and if not used in the right location, can actually further a continuing cycle of wood decay. Hence, epoxy repairs are most successful in areas where they are protected from moisture. Epoxies, of which there are a variety of commercially-available products on the market, are prepared in essentially two forms: a liquid consolidant and a flexible putty filler. Each consists of a resin and a hardener which must be mixed prior to use.

The technique of treating, for an example, a decayed log crown with epoxies is begun by removing loose decayed wood, and drying the area if necessary. The rot-affected cavity and surface of the log end is then saturated with liquid epoxy by repeated brushing, or by soaking it in a plastic bag filled with epoxy that is attached to the log. The porous condition of the rot-damaged wood will draw up the epoxy like a lamp wick. Once the liquid epoxy has



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saturated the log end and cured, the log end has been consolidated, and is ready for the application of an epoxy putty filler. The filler resin and hardener must also be mixed, pigments must be mixed with the filler epoxy to color the patch, and more importantly to protect it from ultraviolet sunlight. The filler can be applied with a putty knife, pressing it into the irregularities of the cavity. The cured patch can be worked like wood and painted with an opaque stain or a dull finish paint to help it blend with surrounding wood, although epoxy repairs can be difficult to disguise on natural, unpainted wood.

Epoxies can be used to consolidate and repair other areas of a log, including rotted internal areas which have not yet progressed to damage the log's outer surface. Saturation of small internal areas can be accomplished by drilling several random holes into the log through an area that will be concealed by daubing, and then pouring in liquid epoxy. If a pure resin is used, it should be a casting resin to minimize shrinkage, and it is best to fill voids with a resin that contains aggregates such as sand, or micro-balloons. Epoxy is frequently used by architectural conservators to strengthen deteriorated structural members. The damaged log can be strengthened by removing the deteriorated wood, and filling the void by imbedding a reinforcing bar in epoxy filler, making sure the void is properly sealed to contain the epoxy before using it. Sometimes larger decayed internal areas of a log can be more easily accessed and repaired from the interior of a structure. This may be a useful technique if it can be accomplished without causing undue damage to the interior finishes in the log building. However, despite its many advantages, epoxy may not be an appropriate treatment for all log repairs, and it should not be used in an attempt to conceal checking, or extensive log surface patching that is exposed to view, or logs that are substantially decayed or collapsed.

Log Replacement

Repairing or replacing only a segment of a log is not always possible. Replacement of an entire log may be the only solution if it has been substantially lost to decay and collapsed under the weight of logs above it. Log replacement, which should be carried out only by experienced craftspersons, is begun by temporarily supporting the logs above, and then jacking them up just enough to insert the new log. Potential danger to the structure may include creating inadequate temporary bearing points, and crushing chinking and interior finishes which may have settled slowly into non-original positions that cannot withstand jacking.





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The new sill matches the original and is a compatible replacement. Photo: NPS files.

To begin the process of log replacement, the entire length of the log must be inspected from the exterior and the interior of the structure to determine whether it supports any structural members or features, and how their load can be taken up by bracing during jacking and removal. On the exterior, sheathing such as weatherboard, and adjacent chinking, must be removed along the length of the log to perform this inspection. Likewise, on the interior, abutting partition walls and plaster may also need to be removed around the log to determine what, if any, features are supported by or tied into the log to be removed. A replacement log should be obtained to match the wood species of the original being removed. If it is a hewn log, then the replacement must be hewn to replicate the dimensions and tool marks of the original. If the same wood species cannot be obtained in the original dimensions, a substitute species may have to be used, and may even be preferable in some instances if a more durable wood can be found than the original wood species. It should, however, be chosen to match the visual characteristics of the original species as closely as possible.

Wood Preservatives

In most instances, the use of chemical wood preservatives is not generally recommended on historic log buildings. Preservatives tend to change the color or appearance of the logs. In addition, many are toxic, they tend to leach out of the wood over time, and like paint, must be periodically reapplied. Many of the late 19th and early 20th century Rustic structures were constructed of logs with the bark left on which may provide protection, while others have been painted. However, some log buildings, and especially log houses that have been inappropriately stripped of historic cladding in an earlier restoration, and now show signs of weathering, such as deep checking, may be exceptions to this guidance. A preservative treatment may be worth considering in these cases. Boiled linseed oil may sometimes be appropriate to use on selected exposures of a building that are particularly vulnerable to weathering, although linseed oil does tend to darken over time. Borate solutions, which do not alter the color or appearance of wood, may be another of the few effective, nonhazardous preservatives available. However, borate solutions do not penetrate dry wood well, and thus the wood must be green or wet. Because borate solutions are water-soluble, after treating, the wood must be coated with a water-repellent coating. In some instances, it may be appropriate to reapply varnish where it was used as the original finish treatment. Pressure-treating, while effective for new wood, is not applicable to in-place log treatment, and is generally not effective for large timbers and logs because it does not penetrate deeply enough.