City Council Staff Report

DATE: October 5, 2016 CONSENT CALENDAR

SUBJECT: APPROVAL OF AMENDMENT NO. 2 IN THE AMOUNT OF $70,000 TO THE PROFESSIONAL SERVICES AGREEMENT WITH ARCHITECTURAL RESOURCES GROUP, INC., (A6791) FOR THE CORNELIA WHITE HOUSE EXTERIOR REPAIRS, CITY PROJECT NO. 15-16

FROM: David H. Ready, City Manager

BY: Engineering Services Department

SUMMARY

Approval of this action will authorize additional design services provided by Architectural Resources Group, Inc., for further investigation and analysis, preparation of design and construction documents (plans and specifications), and added construction phase services for the Cornelia White House Exterior Repairs, City Project No. 15-16.

RECOMMENDATION:

1. Approve Amendment No. 2 in the amount of $70,000 to the Professional Services Agreement (A6791) with Architectural Resources Group, Inc., for a revised total contract amount of $116,253.06 for the Cornelia White House Exterior Repairs, City Project No. 15-16; and

2. Authorize the City Manager to execute all necessary documents.

STAFF ANALYSIS:

On October 21, 2015, the City Council approved a Professional Services Agreement (A6791) with Architectural Resources Group, Inc., ("ARG") in the amount of $41,126 for architectural and historic preservation services to investigate and identify certain recommended repairs for the Cornelia White House Exterior Repairs, City Project No. 15-16 (the "Project"). A copy of the October 21, 2015 staff report is included as **Attachment 1**. A location map of the site is identified in Figure 1.

ITEM NO. 11K

Figure 1

On March 18, 2016, staff received a draft documentation report which presented preliminary findings from ARG's on-site investigations of the exterior building envelope at the Cornelia White House. This draft documentation report included visual field inspections, diagnostic testing and a list of recommended treatments. Further, the draft documentation report incorporated illustrations of the extent of deterioration along with building methods and materials used to mitigate/restore/preserve the Cornelia White House. ARG highly recommends a more comprehensive exterior restoration of the building to address the decay and deficiencies of the existing building. ARG's recommended treatments consisted of the items below which are described in detail within the draft documentation report. A copy of the draft documentation report is included as **Attachment 2**.

Recommended Treatments

- Structural Analysis
- Further Investigation and Testing
- Wood Preservative Treatments
- Wood Repairs
- Other Recommended Repairs and Upgrade (windows, doors, etc.)

On May 10, 2016, a presentation of the draft documentation report was given to the Historic Site Preservation Board ("HSPB"), summarizing ARG's investigations, findings and proposed alternative approaches to mitigate/restore/preserve the Cornelia White House. HSPB was pleased with the results and thoroughness of the draft

documentation report submitted by ARG. HSPB Member La Voie recommended City staff to secure the services of a structural engineer to assess the structural integrity of the existing building and to advise whether seismic or other structural improvements are necessary at the Cornelia White House. In addition, HSPB Member La Voie advised City staff to carefully consider any archival or museum quality contents displayed within the building as the existing climate control may not be capable of maintaining the correct temperature and humidity control for such objects. HSPB concluded the meeting by directing staff to proceed with the development of the construction documents based on ARG's draft documentation report.

In early July 2016, staff requested ARG to provide a proposal for structural engineering services related to a preliminary structural evaluation and historic structures report of the Cornelia White House. A proposal was submitted to undergo a structural evaluation with a scope of work that included a detailed site visit, documentation of existing conditions/structural elements, preliminary structural calculations, a list of potential deficiencies and impacts, a prioritized list of mitigation recommendations and a final report presenting findings for the items described above. On that basis, the City Manager approved Amendment No. 1 in the amount of $5,127.06 to Professional Services Agreement (A6791) with ARG for a structural evaluation report of Cornelia White House. ARG's amended contract is in the amount of $46,253.06.

On August 12, 2016, the final structural evaluation report was submitted to staff for review and approval. The structural evaluation report concluded the Cornelia White House is in "fair" to "poor" structural condition, and recommended that the City implement repairs and retrofitting as recommended in the report. The extent of repairs and retrofit were provided in order of priority as shown in a table within the report; a copy of the Structural Evaluation Report is included as **Attachment 3**.

Staff discussed the next phase of work for the Project (Construction Documents) with ARG. As referenced in their professional services agreement the scope of work to prepare construction documents include:

- *Preparation of construction documents based on draft report recommendations approved by HSPB* ***(note, ARG's scope relies on continuation of oversight and support from IDC as the architect-of-record to prepare full construction document package for bidding)***

Upon further clarification, the intent of ARG's scope of work for this particular task is to provide separate construction drawings sheets to Interactive Design Consultant ("IDC") as the architect-of-record for inclusion into a complete contract bid document package. After consideration, rather than request a proposal from IDC to prepare final construction drawings for the repairs identified in ARG's draft documentation report, staff determined it would be best to amend ARG's professional services agreement by identifying ARG as the architect-of-record to prepare detailed construction drawings for

the Project – eliminating any future discrepancies between IDC and ARG during the preparation of final construction drawings for the Project.

Therefore, staff coordinated with ARG and requested a proposal for additional architectural services for the Project. ARG has submitted a proposal in the amount of $70,000 to include further investigation and analysis, repair design and complete construction documents (plans and specifications) as the Architect of Record, and construction phase services. A copy of ARG's proposal is included as **Attachment 4**. Staff has prepared Amendment No. 2 to the agreement with ARG to accommodate the additional work, which is included as **Attachment 5**.

ENVIRONMENTAL IMPACT:

Implementing exterior repairs to the Cornelia White House, a Class 1 Historic Site, is considered a "Project" under California Environmental Quality Act (CEQA) Guidelines. 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). 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. However, 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"). Therefore, to the extent the recommended repairs will preserve the existing historic building, staff has determined that a Class 31 Categorical Exemption applies to the Cornelia White House Exterior Repairs, City Project No. 15-16 and a Notice of Exemption has been prepared and filed with the Riverside County Clerk.

FISCAL IMPACT:

The City Council has appropriated a total budget of $400,000 for the Cornelia White House Exterior Repairs, City Project No. 15-16, through a budget appropriation of $200,000 from the Capital Project Fund (Fund 261) in Fiscal Year 2015/16, and a budget appropriation of $200,000 from the Measure J Capital Fund (Fund 260) in Fiscal Year 2016/17.

ARG has provided, through its subconsultant, KPJ Consulting, a feasibility cost study on the exterior architectural repairs and structure repairs that have been recommended for

the building. According to the feasibility cost study, the exterior architectural repairs are estimated to cost $580,872 and the structural repairs are estimated to cost $475,601 – for a total estimated cost of $1,056,473. A copy of the feasibility study is included as **Attachment 6**. This cost estimate includes estimating unknowns and contingencies, and through development of final construction drawings a final estimate will be determined. However, it is anticipated that the total cost of the Project will exceed the current budget available of $400,000 and that an additional budget appropriation will be required to construct the Project.

Sufficient funding is currently available to approve Amendment No. 2 in the amount of $70,000 to Professional Services Agreement with Architectural Resources Group, Inc., in the Capital Project Fund, Account No. 261-1395-54114.

SUBMITTED:

Marcus L. Fuller, MPA, P.E., P.L.S.
Assistant City Manager/City Engineer

David H. Ready, Esq., Ph.D.
City Manager

Attachments:
1. October 5, 2015, Staff Report
2. Draft Documentation Report
3. Structural Evaluation Report
4. Architectural Resources Group, Inc., Proposal
5. Amendment No. 2
6. Feasibility Cost Study

ATTACHMENT 1

City Council Staff Report

Date: October 21, 2015 CONSENT CALENDAR

Subject: CORNELIA WHITE HOUSE EXTERIOR REPAIRS, CITY PROJECT NO. 15-16

From: David H. Ready, City Manager

Initiated by: Public Works & Engineering Department

SUMMARY

Previously, the City completed certain repairs to the Cornelia White House located at the Village Green. During completion of those repairs, it was discovered that significant deterioration to the Cornelia White House had occurred beyond the scope of any programmed capital project. The purpose of this item is to discuss an approach to initiate the Cornelia White House Exterior Repairs.

RECOMMENDATION:

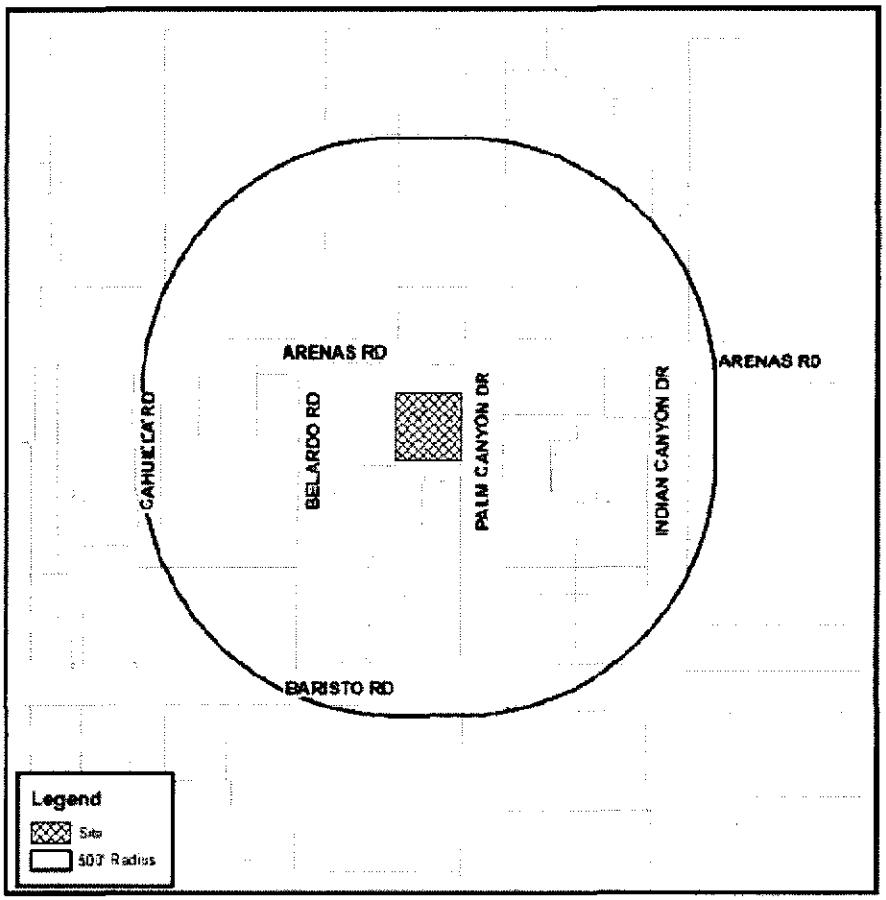
1) Adopt Resolution No. ____, "A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PALM SPRINGS CALIFORNIA, AMENDING THE BUDGET FOR FISCAL YEAR 2015-2016 TO APPROPRIATE $200,000 FOR THE CORNELIA WHITE HOUSE EXTERIOR REPAIRS, CITY PROJECT NO. 15-16;" and

2) Approve a Professional Services Agreement with Architectural Resources Group, Inc., in the amount of $41,126 for architectural and historic preservation services to investigate and identify certain recommended repairs of the Cornelia White House;

3) Authorize the City Manager to execute all necessary documents.

BACKGROUND:

On November 6, 2013, the City Council approved appropriations for certain projects from the Measure J Capital Project Fund, including $50,000 for "Village Green Improvements." The Village Green is located in the Downtown Business District, shown here in the following vicinity map:



Subsequently, staff coordinated with Interactive Design Corporation ("IDC") under the on-call agreement for architectural services to prepare specifications for the removal and repair of the existing roof at the Cornelia White House located at the Village Green. An initial agreement with IDC for $3,500 was approved by staff to coordinate and oversee the roofing repairs of this important historical building.

In April/May 2014, the roofing repairs were completed at the Cornelia White House, however, during review of the Cornelia White House roofing repairs, IDC and staff identified significant water damage to the exterior façade of the building, as well as deterioration of the exterior walls and windows. The water damage is primarily due to the fact that the exterior walls are constructed as three different wall types which have deteriorated and allowed water seepage into the walls themselves, as well as rain-water damage on the lower portions of the walls, and severe water damage where the walls rest on the stem wall foundation.

In some places, the exterior deterioration has reached a point where daylight is visible through portions of the walls, through joints between the window frames and wall framing, and through window sash and frames. An earlier report of the condition of the Cornelia White House list some of these same problems, but the conditions have deteriorated at a vastly accelerated rate due to automatic irrigation spray of adjacent turf and landscaped

areas onto the exterior walls. Staff has since eliminated this problem by revising the automatic irrigation system to avoid overspray onto the exterior walls; however, the damage must be repaired.

IDC has determined that the damage is a function of three construction flaws: the absence of any weather barrier between the exterior skin and the interior framing and finishes; the absence of flashing to shed water at the horizontal joints between the wall and water table or wall and foundation; and previous attempts to "seal" the wall by caulking the joints between the wall and foundation. IDC originally identified a potential solution by proposing installation of a "second skin" over the entire building, for the following reasons:

1. The construction of the building originally was unconventional and ad hoc, though overall the exterior exists as a vertical "board and batten" outer skin; and there is an overall continuity of the board and batten system that would be retained.
2. The unconventional ad hoc construction of the building has been compromised over time by the repeated water damage, and by the structure being moved twice, raising concern to the condition of the materials between the existing outer skin and the fragile board finish (not gypsum board) on the interior.
3. A second skin on the existing wall would establish a weather tight exterior skin consisting of a weather barrier and horizontal flashing.
4. A second skin would lend support to the building to the existing unconventional interior framing system (which has been observed as clearly deteriorated).
5. Removal and replacement of the windows (frames and sash) could be flashed and set into an opening that would no longer be sieve-like in terms of water and air infiltration.
6. A second skin would minimize the exposure and disturbance of the internal materials of the wall and the interior finishes, limiting the collateral damage that would occur by opening up the walls to repair/replace individual framing members, whether they are studs or railroad ties.

IDC also proposed to remove and rebuild each of the windows (frame and sash) with proper flashing and anchorage, by milling all muntins and mullions to the existing profile, retaining the sash (rails and stiles) the same dimensionally, and reusing the trim or replacing with in-kind material. A copy of IDC's proposed approach to repairing the Cornelia White House is included as **Attachment 1**, and was estimated to cost $115,050.

Given the Class 1 historic designation, IDC's proposal to repair the Cornelia White House was presented to the Historic Site Preservation Board ("HSPB") at its June 2014 meeting; a copy of the associated HSPB staff report is included as **Attachment 2**. However, at that meeting the HSPB reviewed the proposal for a "second skin" repair, and did not approve IDC's proposed repairs on the basis that the repairs do not implement a true "repair and replace" method that would appropriately preserve the historic integrity of the building. At that time, the HSPB suggested that staff retain an architectural firm specialized in historic preservation to identify the best solution to repairing the building.

Taking HSPB's concerns into consideration, IDC reviewed alternatives and proposed a modified approach to identifying the repairs required at the Cornelia White House, described as:

1. 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 provide a better understanding of the conditions that lie within the walls and the true construction method and materials.
2. Address a defined section (as shown on preliminary drawings) so that in the process of removing/repairing/replacing a weather barrier and weep screed can be added that will prevent further water intrusion.
3. This investigation/removal has the inherent danger of damaging interior finishes because in some locations it is expected that 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.
4. The repair and replace method would be monitored so any work that might result in substantial damage could be halted quickly.

A copy of IDC's modified approach to repairing the Cornelia White House is included as **Attachment 3**, with an estimated construction cost of $101,850. IDC presented their modified approach to the HSPB at their July 8, 2014, meeting; a copy of the associated staff report is included as **Attachment 4**. However, at that meeting the HSPB did not approve IDC's modified approach, and recommended that the City retain a professional forensic architect specializing in historic preservation to identify the appropriate corrective repairs required to retain the integrity of the building.

With direction given by the HSPB, staff coordinated with IDC on preparation of a Request for Proposals ("RFP") to retain an architect specialized in historic preservation that could review the Cornelia White House and recommend the most appropriate repairs. IDC coordinated preparation of the RFP and solicitation to specialized firms, and received three proposals from the following firms:

1. Architectural Resources Group, Inc.; Pasadena, CA (Christopher Smith)
2. Historic Resources Group; Pasadena, CA (Peyton Hall)
3. Wiss, Janney, Elstner Assoc., Inc.; Pasadena, CA (Kyle Normandin)

IDC convened a selection committee comprised of Reuel Young, Patrick Sweeney, Nicolette Wenzell and Jeri Vogelsang from the Historical Society, to review the three proposals received. The selection committee agreed that Architectural Resources Group ("ARG") was the most responsive and desirable firm. Staff has prepared a Professional Services Agreement ("PSA") with ARG to provide architectural and historic preservation services to the City associated with the Cornelia White House, in an amount not to exceed $41,126; a copy of the PSA is included as **Attachment 5**. The scope of services of the PSA is limited to:

- Investigation and documentation of the building to identify existing conditions, construction type, extent of damage, and prepare draft report including findings and recommendations for presentation to the HSPB;
- Interim Presentation of draft report to HSPB, including probable cost for ARG's recommended approach (***note, a recommended repair has not yet been identified, and no cost estimate for required repairs will be available until such time as ARG has completed their draft report***);
- Preparation of construction documents based on draft report recommendations approved by HSPB (***note, ARG's scope relies on continuation of oversight and support from IDC as the architect-of-record to prepare full construction document package for bidding***);
- Bidding phase services;
- Field observations;
- Documentation (final report)

Staff is recommending that the City Council approve the PSA with ARG, as recommended by the HSPB, which will identify certain recommended repairs of a yet undetermined cost. Following identification of recommended repairs, and approval of those repairs by the HSPB, it will be necessary to coordinate preparation of final construction drawings of those repairs by IDC (for a cost yet to be determined), pursuant to an amendment to the agreement with IDC to be approved by the City Council at a later date.

ENVIRONMENTAL IMPACT:

Implementing exterior repairs to the Cornelia White House, a Class 1 Historic Site, is considered a "Project" under California Environmental Quality Act (CEQA) Guidelines. 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). 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. However, 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"). Therefore, to the extent the recommended repairs will preserve the existing historic building, staff has determined that a Class 31 Categorical Exemption applies to the Cornelia White House Exterior Repairs, City Project No. 15-16; a copy of the Notice of Exemption is included as **Attachment 6**.

FISCAL IMPACT:

The City Council previously budgeted $50,000 from the Measure J Capital Improvement Fund (Fund 260) for the Cornelia White House Exterior Repairs. This budget has been exhausted in completing the re-roof and landscape irrigation retrofit repairs that were the original scope of the project.

ARG will investigate and identify recommended repairs that will best preserve the historic integrity of the Class 1 building. However, IDC's recommended repairs have been estimated to cost $115,050 ("second skin" approach) or $101,850 ("piece by piece" approach). A copy of IDC's estimate is included as **Attachment 7**.

Staff recommends that the City Council adopt a Budget Resolution to appropriate $200,000 from General Fund Balance for the Cornelia White House Exterior Repairs, City Project No. 15-16, included as **Attachment 8**.

SUBMITTED

Prepared by:

Marcus L. Fuller, MPA, P.E., P.L.S.
Assistant City Manager/City Engineer

Approved by:

David H. Ready, Esq., Ph.D.
City Manager

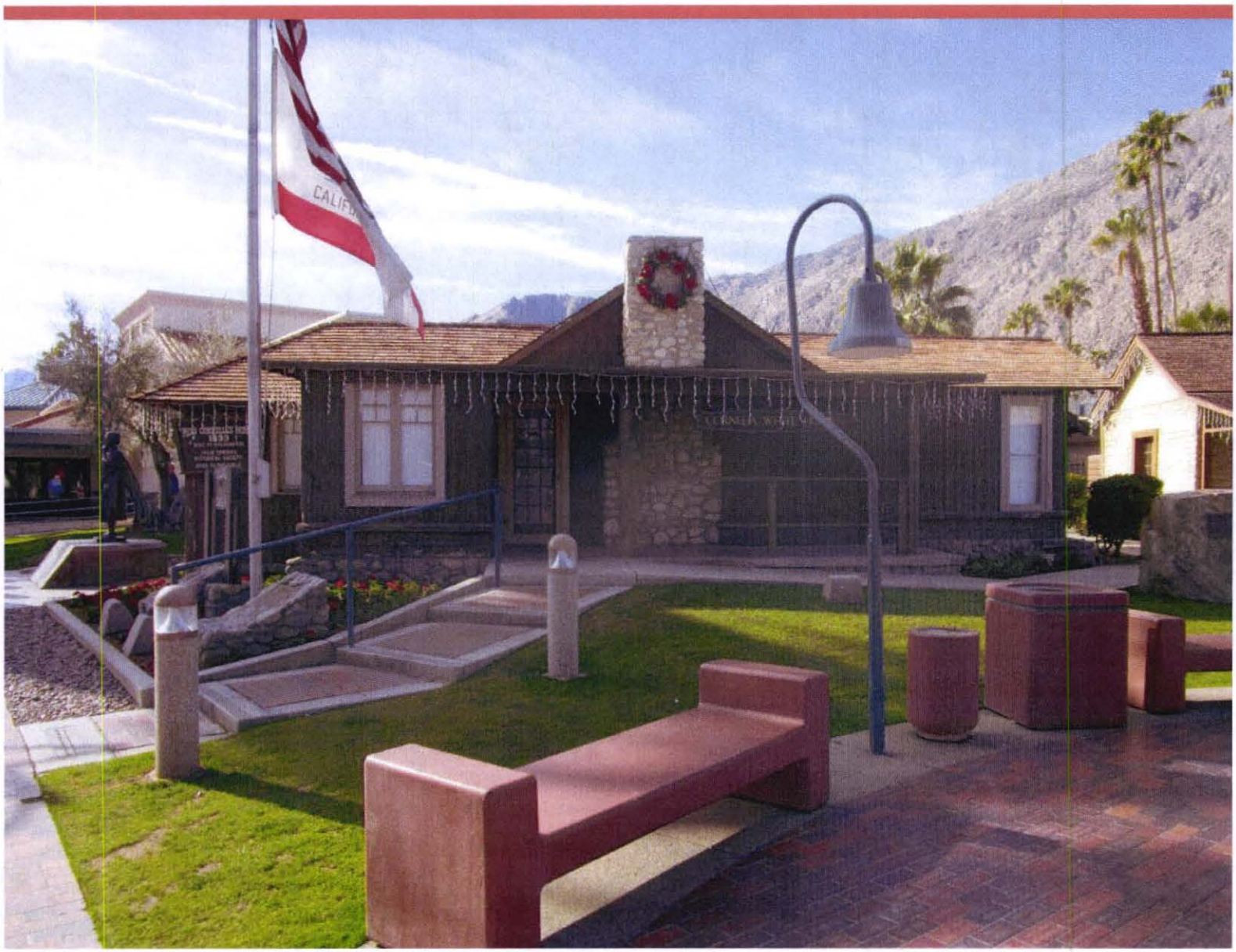
ATTACHMENT 2

EXTERIOR INVESTIGATION REPORT

Cornelia White House

City of Palm Springs | 221 South Palm Canyon Drive
March 18, 2016

Architecture
Planning
Conservation



Architectural
Resources Group

Architectural
Resources Group

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Architectural
Resources Group

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Pasadena, CA 91105

- *David Wessel, AIC, FAPT, Principal-in-Charge*
- *Christopher J. Smith, Principal, Preservation Specialist*
- *Sarah Devan, R.A., AIC, Project Manager, Architect and Conservator*

East Elevation

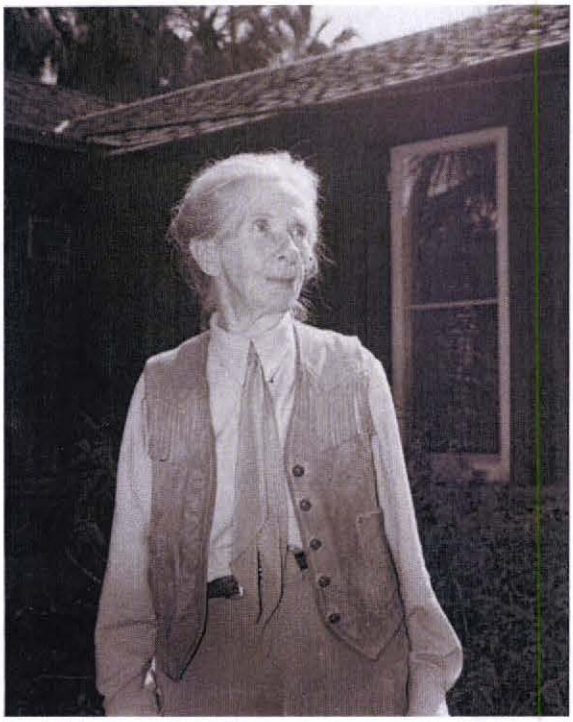
Introduction

Architectural Resources Group (ARG) is pleased to provide this investigation report for the Cornelia White House in Palm Springs, California. This report presents preliminary findings from our on-site investigation of the exterior building envelope, including a summary of background information, visual field inspection and diagnostic testing, and presents recommendations for treatment and further study.

Background

The Cornelia White House was built by Dr. and Mrs. Welwood Murray in 1893 on the site of their Palm Springs Hotel. It was constructed of railroad ties that were salvaged from an abandoned narrow-gauge rail line which once connected the Southern Pacific depot in Gamet with Palmdale (now Smoke Tree Ranch). Cornelia Butler White (1874-1961) and her sister Dr. Florilla White (1871-1943) purchased the property in 1914, and Ms. White used the house as her residence. In 1944, the house was in danger of demolition and was moved to 145 East Tahquitz Canyon Way, where Ms. White lived until her death in 1961. The house was later moved again in 1979 to its present location on the Village Green, at 221 South Palm Canyon Drive, adjacent to the circa 1884 McCallum Adobe, also owned by the City of Palm Springs.[3] It is operated as a house museum, with guided tours provided by the Palm Springs Historical Society.

1 Source: Cornelia White House visitor handout, compiled by Roger C. Palmer, Ph.D. (rev 11/2008). Palm Springs Historical Society, 221 South Palm Canyon Drive, Palm Springs, CA 92262.



Cornelia White in front of her house, circa 1960. (Photo courtesy: Palm Springs Historical Society)

Background

Relocation in progress, 1979. (Photo courtesy: Palm Springs Historical Society)

Relocation in progress, 1979. Note enclosed porch at left of image. (Photo courtesy: Palm Springs Historical Society)

Relocation in progress, 1979. (Photo courtesy: Palm Springs Historical Society)

The house has had several modifications throughout its long life. Unfortunately, most of these are undocumented and historic photographs are non-existent. The "second room" at the southeast corner (currently interpreted as an office/sitting room) was originally an open porch that was later enclosed. The date of this modification is unknown, but it was enclosed prior to the 1979 relocation, as seen in the photographs below. The large chimney and fireplace are most likely original to the structure, and can also be seen in the 1979 relocation photos (below). Foundation elements, including concrete and stone walls, slabs and footings, are all contemporary and likely dating to the 1979 relocation or after. The roofs and shed awning, including decking and felt underlayments, were replaced in 2013. The bathroom window at the north elevation was also replaced by an area craftsperson within the last few years. The porch railings are reportedly conjecture; the original porch configuration may have been columns only. Interior finishes and fixtures are a mix of historic and contemporary materials. For example, some rooms have new painted gypsum wallboard finishes. There are only a few items and furnishings owned by Ms. White in the house; the bulk of the collection are period pieces donated by area residents.

Document Review

Document Review

ARG was provided with several background documents for review, including the following:

- "Architectural Conservation Assessment," prepared by Synthesis Design Group (SDG), dated September 1993.

  This report is an assessment of exterior and interior conditions at the Cornelia White House and the McCallum Adobe, including recommendations for maintenance and design enhancements.

  SDG noted that the Cornelia White House was in good physical condition, with maintenance problems associated largely with the siding and trim, including peeling paint, wood deterioration and rot, and failed caulk joints. Other exterior concerns included peeling paint and wood deterioration at several windows and the kitchen door, and a damaged crawl space door. Their recommendations included replacement of caulking at the base of siding, application of a clear penetrating wood preservative at siding surfaces, repair of the rear kitchen door, wood consolidation repairs at windows and porch posts, and repainting.

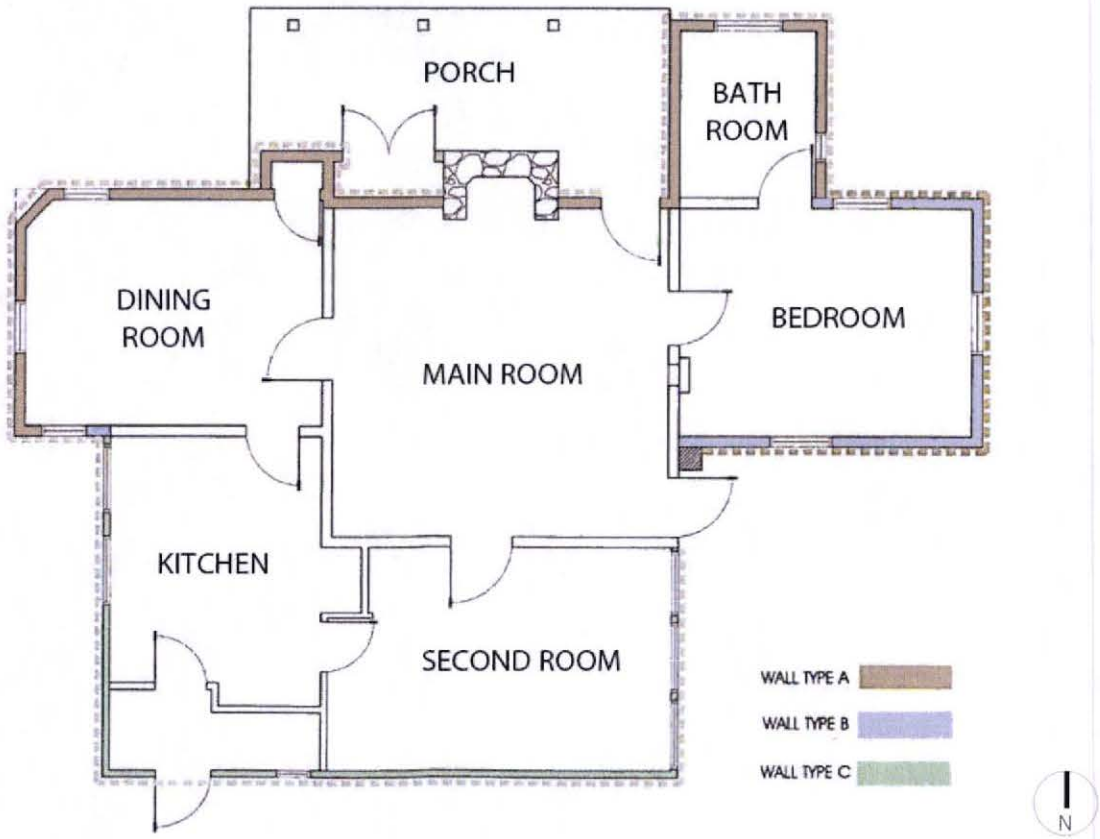
  SDG comments related to the McCallum Adobe also addressed maintenance concerns, including water infiltration at adobe walls, roof problems and deteriorated wood trim.

- "Roof Improvements for the Historical Society Cornelia White House," prepared by Interactive Design Corporation (IDC), stamped and signed but not dated (assumed 2013), reviewed copy was marked "preliminary, not for construction."

  Roof replacement project drawings detailing the following scope of work: Replacement wood shingle roofing and single-ply membrane sheet roofing systems, replacement plywood sheathing and felt underlayments, and replacement barge boards and associated trim.

- "Cornelia White House Rehabilitation," prepared by Interactive Design Corporation (IDC), dated May 19, 2014.

  Schematic repair drawings for exterior wood repair including existing plan, elevations and wall sections, some delineation of the extent of deterioration observed, and proposed repair details. Proposed repairs included new vertical board and batten siding over the existing walls, installed with a weather barrier and furring strips (spacers). Proposed repairs also included new galvanized base flashing at the base of new siding, and wood dutchmen repairs at the base of Type A walls.



Floor plan of Cornelia White House. (Courtesy : IDC)

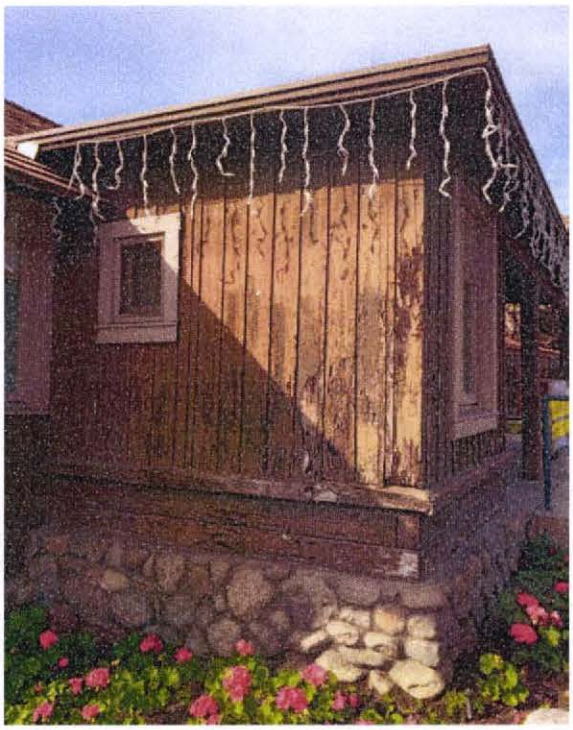
Existing Conditions Assessment

Sarah Devan, R.A., AIC, a conservator with ARG Conservation Services, reviewed available drawings and documentation, and performed a visual condition assessment of the exterior wood structure on January 11, 2016. The structure was surveyed visually from the ground and from accessible areas of the crawl space. Probing was performed using small hand tools in various locations, and diagnostic testing was performed using a Resistograph tool and a moisture meter (see "Field Testing" section below for more information.)

For reasons of clarity and continuity, this report continues to reference the same wall type designations listed by IDC in their schematic repair drawings. IDC divided the existing exterior walls into three types. For field testing purposes, the wall types were further subdivided depending on their location within the wall (i.e. base, belt course, low or high in the wall.) The wall type designations are as follows. See "Appendix A: Existing Condition Drawings" for typical details of wall types.

Type A Walls: Comprise the exterior walls of the Dining Room, Main Room and Bathroom. Type A walls consist of two horizontally stacked and exposed railroad ties at the base of the wall, topped with a belt course. The wall above is composed of vertically-oriented railroad ties with battens at joints. Type A walls have been sub-divided into the following categories:

- **A-1 (base of wall):** Member thickness (depth into wall) is 4 inches nominal. Test locations were approximately 6 to 12 inches above the foundation wall.
- **A-2 (belt course):** Member thickness (depth into wall) 6 inches nominal, member height is 3-1/2 inches at the face with a sloped top surface. Test locations were at the center of the vertical face of the member.



Type A walls at northeast corner.

- **A-3 (low in wall):** Wall thickness is 4 inches nominal. Test locations were approximately 3 feet above the foundation wall.
- **A-4 (high in wall):** Wall thickness is 4 inches nominal. Test locations were approximately 6 feet above the foundation wall.

Type B Walls: Comprise the exterior walls of the Bedroom. Type B walls reportedly consist of horizontally-stacked railroad ties with exterior vertical board-and-batten siding. Resistograph test data indicates that the wall thickness is 4-3/4 inches nominal (varies slightly), with 2 inches of wood material (siding board and possibly backup board or nailers) at the exterior, 3/4-inch of interior finish material, and a gap of approximately 2 inches between suggesting possible vertical stud spacing. This data is inconsistent with the assumed stacking construction method shown in IDC's wall section. All but one of the Resistograph test locations returned the same result of the 2 inch gap; one location (N-02) shows additional framing at this gap. Further investigation is needed for confirmation, but based on these results, the wall section is most likely vertical stud spacing rather than horizontal stacking. For testing purposes, Type B walls have been sub-divided into the following categories:

- **B-1 (low in wall):** Test locations were approximately 2 feet above the foundation wall
- **B-2 (high in wall):** Test locations were approximately 6 feet above the foundation wall.

Type C Walls: Comprise the exterior walls of the Kitchen and Second Room (enclosed porch). Type C walls consist of exterior vertical board-and-batten siding over conventional 2x wood stud framing. Please note, observations and measurements taken at the west elevation mechanical area are inconsistent with IDC's wall section. The wall is comprised of vertical wood stud framing, with 1 inch thick (5/4 lumber) horizontal cross pieces (used as nailers for siding), and board-and-batten siding.

The exterior wall structural framing and siding of the Cornelia White House is generally in poor condition. Relocating the house twice, in combination with a lack of maintenance, poor previous repairs, poor detailing of foundations, and the natural weathering and aging of materials, has led to extensive wood decay and a loss of structural integrity.

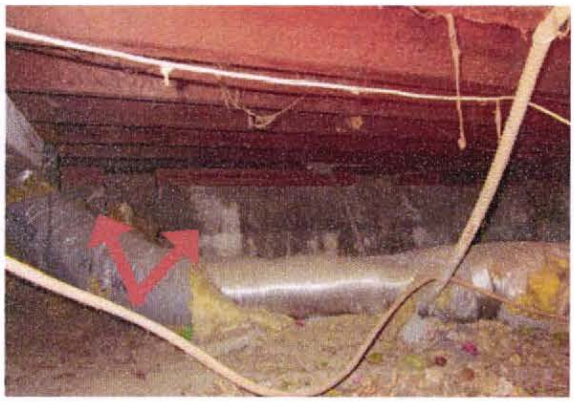
The wood-framed superstructure of the house is raised on a perimeter foundation wall. The foundation wall is composed of reinforced concrete with field stone at the exterior faces. The stone is fully mortared to the wall, and there is a mortar wash generally present at the top surface of the wall. However, the top surface is relatively flat throughout, with little to no positive slope away from the building for surface drainage. There was no flashing or waterproofing was observed. Sealant has been used to seal the horizontal joint between the foundation wall and wood walls. This has trapped moisture within the woodwork, and exacerbated the decay. Cracks were observed at the northwest corner and southwest corner of the Dining Room foundation walls. At the northwest corner, the building has an angled wall (chamfered corner) whereas the foundation wall has a full 90-degree turn. The stones at the southeast corner are oddly laid, with some overlap with landscape curbing. It is unclear how this form affects the concrete foundation wall, or if it is a weak detail and could potentially be a problem in the future. Landscaping includes a small tree, grass lawn, and some flower beds. There is an underground sprinkler system surrounding the building, but the watering schedule is unknown at this time. Reportedly, some sprinklers have sprayed the building walls in the past.

Concrete and stone foundation wall at northwest chamfered corner. Note crack in wall.

Typical sealant joint at horizontal joint between wood and foundation walls.

Foundation wall stone detail at southeast corner.

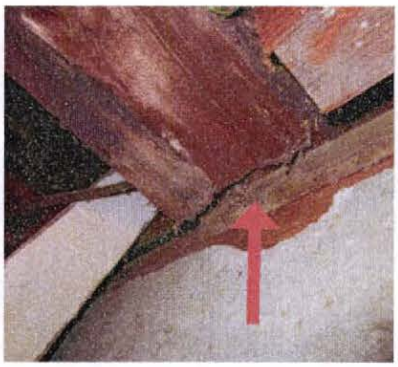
Crawlspace entry at east elevation.



View inside crawlspace to west foundation wall below Kitchen. Note engaged piers and blocking with stone between.

The crawl space was accessed at the time of our survey. The entrance is at the enclosed porch area (Second Room) at the east elevation. It is framed below-grade with concrete and stone walls, and has a locking metal grille cover. The opening is tight and difficult for maintenance staff to access. The foundation wall appears to be non-continuous. There are breaks where the wall forms engaged piers, and the back of stone can be seen between. Floor joists appear to be a mixture of old and new lumber, roughly 2x10 in size. They are supported at the foundation wall engaged piers by wood blocking, and within the crawlspace by larger timber beams. The timber beams are also a mix of different generations of material. In many cases, the ends of the beams at the foundation walls are decayed. The beams have been secondarily supported throughout their lengths with various items, including short posts on wood blocking and cmu blocks, and metal tripod-type supports. Finish flooring appears to be secured directly to the floor joints; no sub-floor was observed. The crawlspace itself is fairly open; there is some minor debris accumulation throughout. Insulated ductwork rest on the ground. All wood elements are generally raised from the ground. There were no observed signs of recent insect attack, such as mud tubes, wood tunneling or boring, flight holes, or frass noted.

View in crawlspace looking north. Note beam post supports.



Decay at end of beam at east foundation wall.

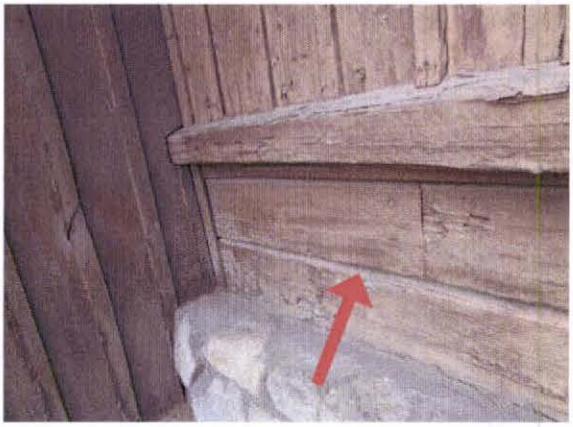
Metal tripod support at crawlspace.

Railroad ties, also known as cross ties, are the principle structural framing for many of the exterior walls. Cross tie specifications have changed little over the last century. They are typically divided into two grades: 7-inch grade for heavy duty rail traffic (7"x8" or 7"x9") and 6-inch grade for light duty traffic (6"x7" or 6"x8"). They are typically provided in 8-, 8-1/2- and 9-feet lengths.[2] The cross ties found throughout the Cornelia White House are typically 4-inches thick. Therefore, it can be safely assumed that the ties were cut down in cross section during construction.

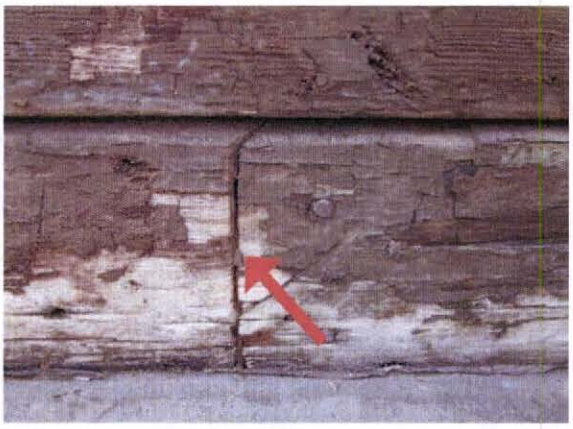
At Type A walls, the cross ties are stacked horizontally at the base, used as a belt course detail element, and used vertically as the main portion of the wall. The horizontal cross ties are nominally 4-inches thick by 6-inches tall. Building corners are simply detailed, with the upper member supported by the lower, rather than using a dovetail or other type of joinery common to timber construction. End-to-end joints within the wall have angled cuts. Also, it appears that the horizontal cross ties have chamfered top and bottom edges; this can be seen at the east elevation of the Bathroom wall where it is slightly more protected from the roof overhang.

2 The Tie Guide, Handbook for Commercial Timbers Used by the Cross tie Industry," Prepared by David A. Webb for The Railway Tie Association. Ed. James C. Gauntt and Deborah L. Corallo.

Heavy decay at cross ties at northeast corner.



Chamfered edge detailing still visible at cross ties at east elevation.

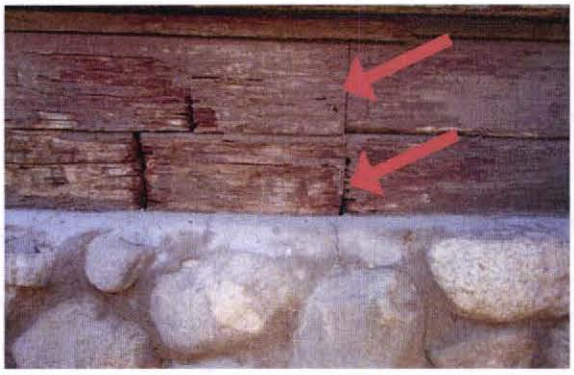


Angled end-to-end cut at cross ties.

Heavy decay at cross ties at west elevation.

Decay and section loss at cross tie at northwest corner of Bathroom.

The cross ties have moderate to advanced decay throughout. The decay is more advanced at building corners, end-to-end joints and at the base of members in contact with the foundation wall. Several areas of full thickness voids were observed at east, west, and north elevations. At the west elevation, there appears to be a replacement piece; the piece is short in length, with straight cut end-to-end joints rather than angled. There is also a rectangular dutchman repair directly above this replacement piece. Previous epoxy repairs were also noted at the base of the walls. This appears to be an injectable-type epoxy and no longer serves its purpose. The epoxy is aged and yellowed, and is no longer bonded to the wood substrate. It also traps moisture within the wood, promoting further decay.



Prior cross tie replacement and dutchman repair above, west elevation.

Prior epoxy repair at west elevation.

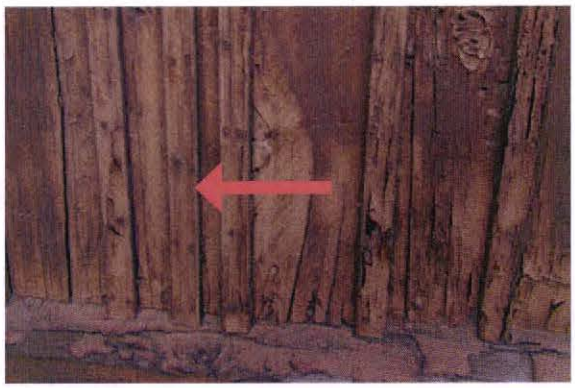
The belt course is a horizontal detail element also constructed of railroad ties. It is 6-inches thick and 3-1/2 inches in height. It projects out from the face of the wall and has a sloped top surface for drainage. There was no carved drip edge observed at the underside. Sealant has been used in the past to seal the horizontal joint between the top of belt course and vertical cross ties and battens. The belt course members are in fair condition. There is some decay and section loss, particularly at building corners, but they generally retain their original form and shape. At the east and west elevations, the bottom 1/2-inch of the belt course has been cut away, most likely to remove areas of decay; at the west elevation, a trim piece was added at the wall to cover the joint. At the south elevation (north end of the mechanical area), the belt course sloped face has been notched at one end, for reasons unknown.

Belt course at northeast corner. Note bottom 1/2-inch removed.

Heavy decay at belt course at west elevation.

Belt course at south elevation of Dining Room. Note notch at right side.

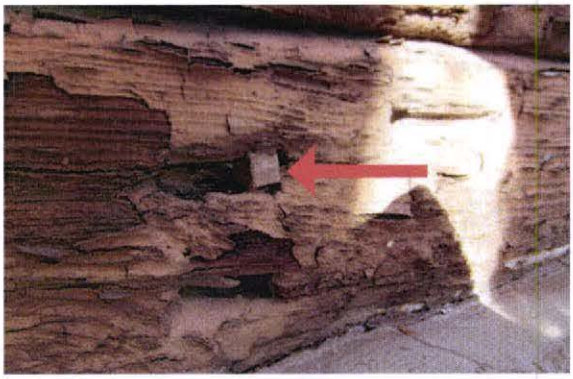
Heavy decay at base of cross ties above belt course at west elevation.



Cross ties and battens at east elevation. Note additional batten at left of image

Cross ties at east elevation. Note mortises and other surface features.

The vertical cross ties are nominally 6-inches wide by 4-inches thick, and positioned adjacent to each other in the wall (sandwiched together with no space between). Battens are used to cover vertical joints between members. The cross ties are in fair to poor condition. There is advanced wood decay at the base where they meet with the belt course element. This is particularly noticeable at the northeast corner of the east elevation and along the west elevation where there are full thickness voids. Sealants have been used in the past to seal this horizontal joint with the belt course which has trapped moisture in the wood, exacerbating the decay. Vertical checking and splitting was noted throughout, in some cases running the full height of the cross tie members. At a few wide splits, additional battens have been installed. Other surface features included gouges, round indentations (possibly from hammers), mortised ends, wrought iron forged spikes and nails, and holes from missing nails and anchors.

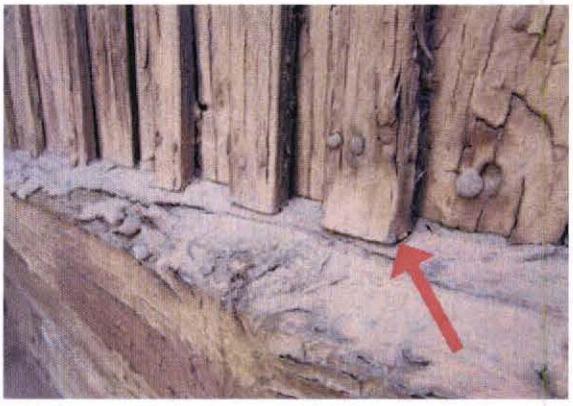


Wrought iron spike at cross tie at east elevation.

Vertical board-and-batten siding is found at Type B and Type C walls, and just batten trim at Type A walls. The siding typically terminates at the stone and concrete foundation wall, with sealant at the horizontal joint. At the mechanical area, the siding terminates approximately 12-inches above the concrete slab. The siding boards are typically 3/4-inch thick by 6-inches in width (with some variation). They are face-nailed to horizontal nailers with ferrous fasteners. In general, the siding boards are heavily weathered, with advanced wood decay at the base of walls. There are numerous splits throughout, holes and losses at knot locations. At the east elevation of the enclosed porch area (Second Room) below the windows, the wall siding has displaced outward and is loose from the stud framing. There is an open gap at the top of the siding in this location. No flashing was visible at the window sill.

The vertical battens are 1-1/2 inches wide by 1/4-inch thick. They are face-nailed to the cross ties and siding boards with ferrous fasteners, and have angled cuts at the base to fit snugly against the sloped top surface of the belt course. Battens are in fair condition overall. There are numerous splits, particularly adjacent to corroded fasteners. There are also warped and bowed battens, some no longer covering vertical joints, and a few missing battens. And as mentioned above, a few battens have been added to cover larger splits in siding or vertical cross ties.

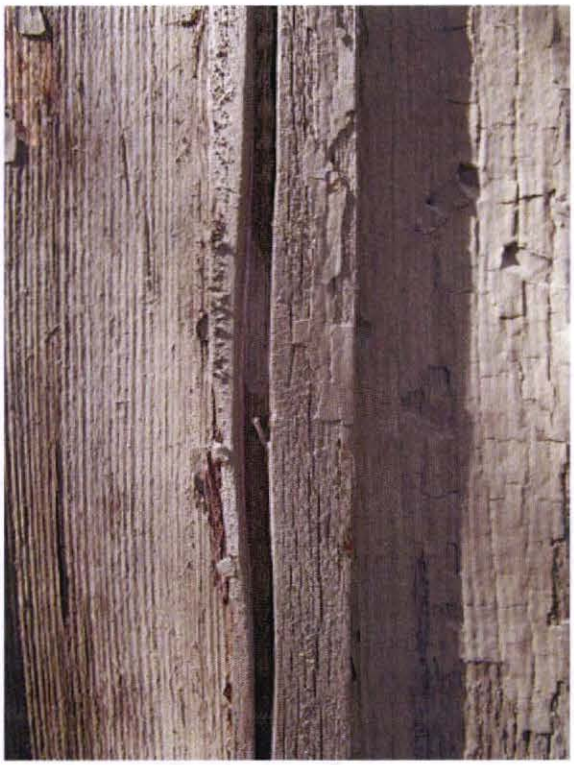
Board and batten siding at south elevation of Bedroom.



Typical batten detailing. Note angled end cuts.

Decayed, missing and added battens at north elevation.

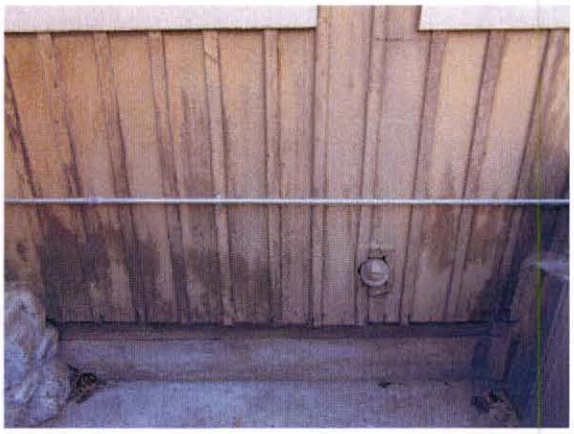
Displaced siding at east elevation of Second Room.



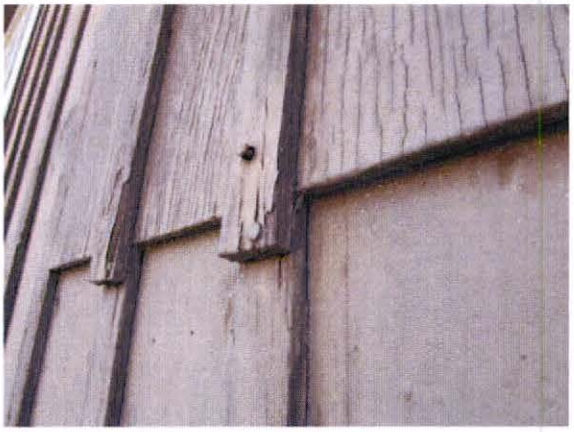
Split batten at east elevation.

Warped batten at east elevation.

The board-and-batten siding has had numerous repairs and modifications over the years. At the southwest corner, the siding has been partially overlaid with an additional 1/4-inch layer of board and batten siding. This is at locations for surface-mounted boxes and other equipment. At the base of the west wall, near the center, a large opening has been cut into the siding to install heating and ventilating ductwork. The ductwork is poorly sealed to the siding with lots of sealant. Other modifications at this area include surface-mounted boxes, conduits, switches, etc. and a cleanout for the kitchen sink. Surface-mounted conduits, electrical boxes and lights have been added at the other elevations. Also, just to the east of the kitchen door, the foundation wall rises in height slightly. The base of the siding was most likely cut to accommodate for this construction imperfection.



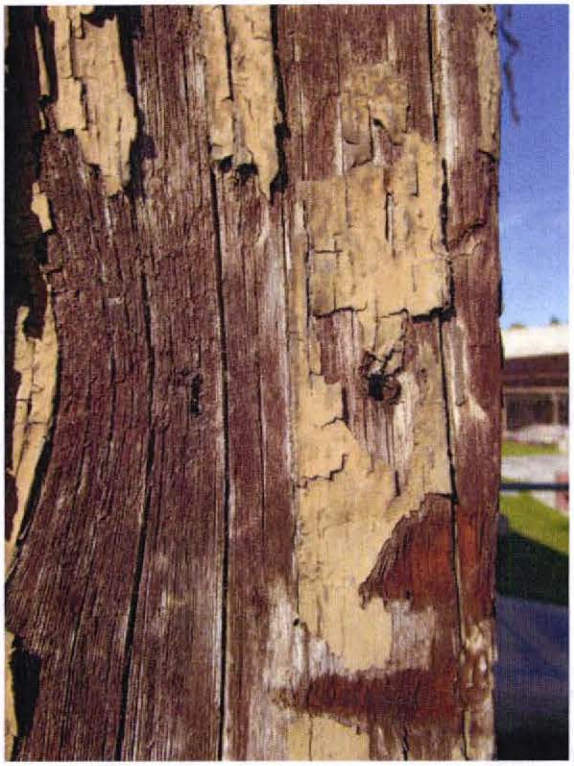
Board and batten siding at west elevation of Kitchen.



Overlaid siding at west elevation mechanical area.

Modified siding at west elevation for HVAC equipment.

Rise at foundation wall, south elevation.



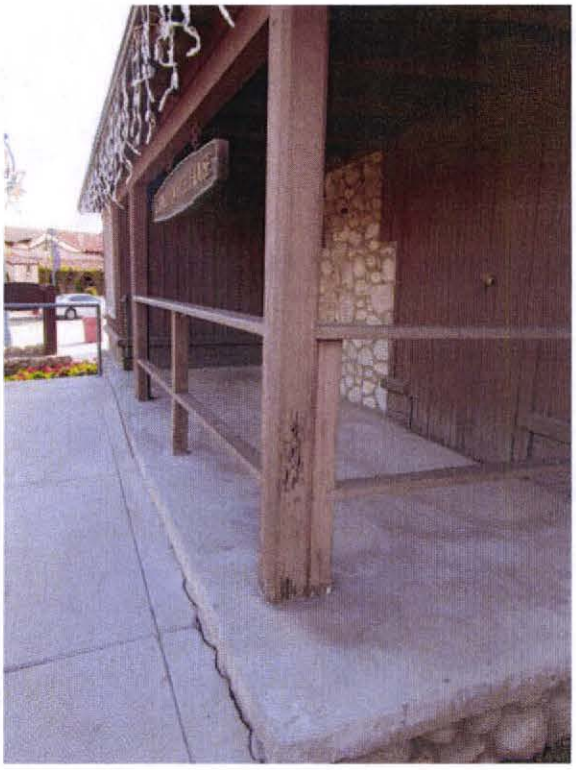
Detail view of heavily deteriorated paint. Note white residue which could be old primer or paint layer.

Typical view of paint coatings. Note relatively intact paint layer at protected porch (right) side and deteriorated layer at exterior (left) side.

Exterior surfaces of cross ties, siding and trim are generally painted a flat brown color with windows, doors and trim painted a pale pink. It is unclear whether these are the original paint colors, or if the house has always been painted or if the railroad ties had a natural or stained finish at one time. Additional finish sampling is needed for confirmation. The photo from 1960 indicates painted surfaces, with the window sash painted a light color and the casing trim matching the building walls. In the 1979 photos, the windows and casing trim are painted pink. In general, paint coatings may have been preferred since they would provide a uniform finish for the various wood species, light and dark, used throughout the house. However, any creosote preservative treatment originally used on the cross ties would have made painting difficult, most likely requiring repainting more often.

Existing painted surfaces are soiled, chalked and faded, with heavy peeling paint and paint loss noted throughout. The wood appears grayed and weathered below the peeling paint, with possible remnants of white paint or primer visible. In general the paint coating is more intact at protected wall areas, such as the covered entry porch.

The porch concrete floor slab was most likely installed when the building was moved to this location. The slab has positive slope for drainage to the north. There is some wood decay and staining at the base of the building walls, in particular at the northeast corner of the porch, possibly from splashing of roof water. No gutters or downspouts were observed. Porch columns have been raised from the floor on metal column bases. There was some decay observed at the base of the columns. The balustrade railing was reportedly added at a later date. It consists of an upper and intermediate rail and vertical posts. The posts sit flush with the concrete slab and are decayed at the bottom.



View of entry porch slab and balustrade.

View of decay at porch column and base of balustrade post.

Mechanical area at southwest corner.

Fence at north end of mechanical area. Note connection to southwest corner of Dining Room.

Concrete slab Kitchen door entrance.

The mechanical area (west of the Kitchen) contains a concrete floor slab which supports the HVAC equipment. The area is surrounded by low concrete and stone walls and a wood-framed fence. There is a gate at the south end. The fence is composed of vertical posts, horizontal top and bottom rails and vertical boards to the outside. It is attached to the building at the north end with pieces of wood scabbed onto the building corner. The fence is generally in poor condition, with large gaps, missing boards, and loose components.

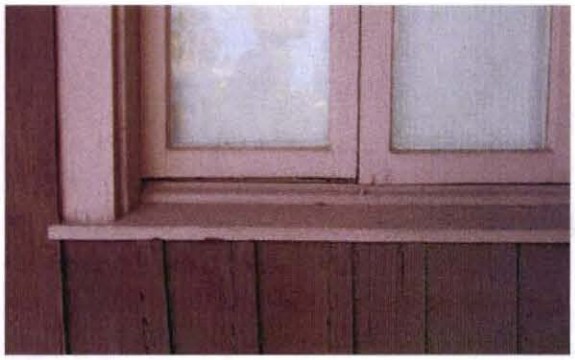
There is a concrete sidewalk leading up to the rear Kitchen door. Just to the west of the door, it appears that a small section of concrete slab has been added between the walk and the mechanical area gate. This slab is sloped toward the mechanical area, but has been poured directly up against the wood structural framing of the house. The stone from the foundation wall also appears to be directly in front of the structural framing. There was no visible flashing or waterproofing membrane observed. An oversized hole has also been cast into the small slab section for electrical conduit, leaving an easy access point for water penetration into the foundation of the building.

Detail view of concrete slab. Note proximity of concrete and stone to wood framing.

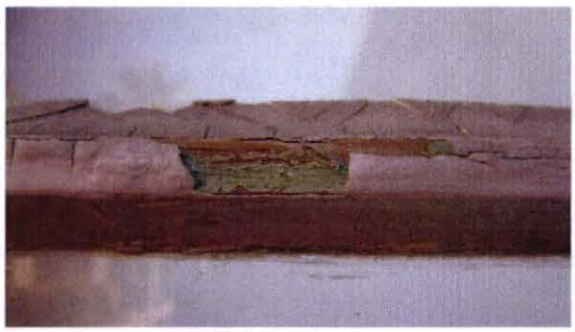
Windows are painted wood sash in wood frames. The types include casement and double-hung sash, some with divided lites. In general, window sills and base of frames, sash and trim are moderately to heavily deteriorated, with wood decay, and cracked and peeling paint observed. Glazing putty is also deteriorated, cracked and separating from the sash. The bedroom window at the north elevation appears to have been modified. The bottom of the east casement sash has been cut, and no longer fits properly to the sill. It also has a broken glass pane. The bathroom window at the north elevation was reportedly replaced by an area craftsman. No information was provided regarding the extent or detailing of the work. Windows have been painted various colors over time, including an earlier mint green. Further investigation is needed to determine original finish colors.

Typical condition at base of windows.

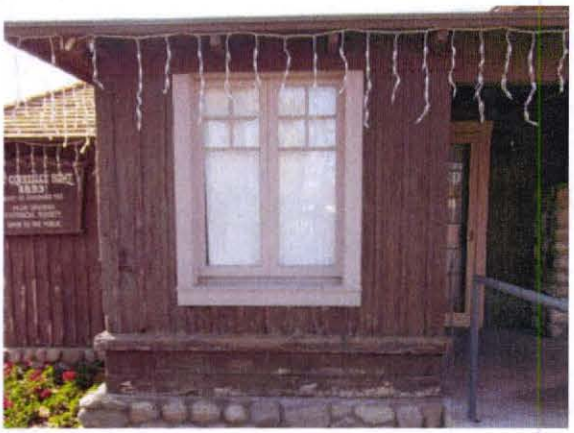
Advanced decay at Dining Room window at west elevation.



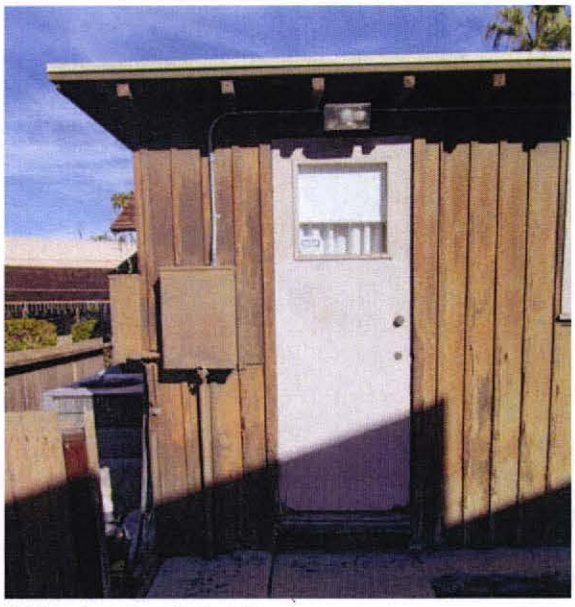
Modified sash at Bedroom window, north elevation



Detail view of window muntin at west elevation. Note mint green paint.



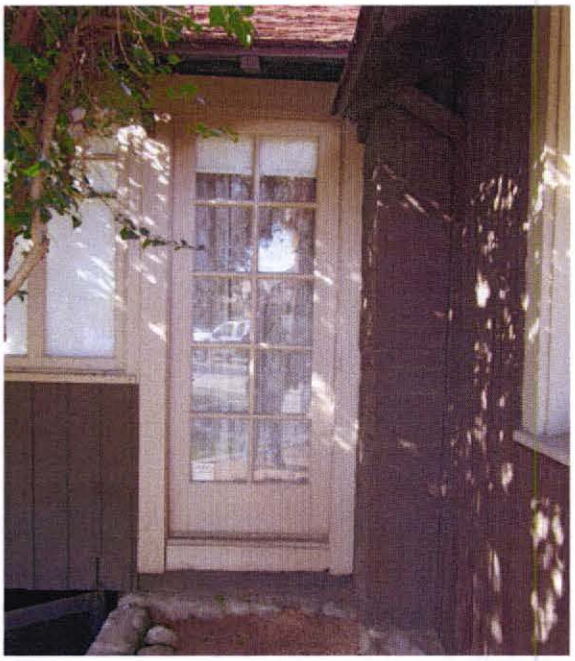
Replaced window at north elevation of Bathroom.



Kitchen door at south elevation.

Decay at base of Kitchen door.

The front door at the north elevation and the enclosed porch (Second Room) door at the east elevation are wood doors with divided lites in wood frames. They are generally in good condition. The east elevation door has some minor decay at the sill and base of trim. The Kitchen door at the south elevation has been replaced with a contemporary flush panel door with a vision panel. The sill and base of the door and frame are heavily deteriorated, and the door style is not in keeping with the architectural character of the building.



Door at east elevation of Second Room.

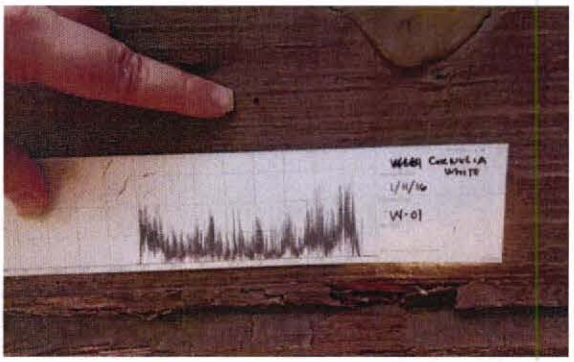
Field Testing

Diagnostic testing was performed at various locations throughout the structure, including Resistograph testing and moisture readings. Resistograph testing was performed using an IML Instruments RESI F-Series Resistograph. This instrument consists of a large graphing paper magazine attached to a Bosch electric drill, fitted with a 1/8-inch diameter drill bit. It is designed for use in decay analysis of wooden materials, such as trees, beams or poles, and measures the resistance of the wood member as it is drilled. The resistance is charted on a graph, and used to determine if sub-surface (interior) portions of wood are deteriorated. Test locations were drilled using low rotational speeds for higher graph resolution. The instrument was cleaned and calibrated prior to use. The 1/8-inch diameter holes that remain following the tests are inconspicuous and can be easily repaired at a later date if desired.

Test results are expressed as an approximate percentage of deterioration in cross section. Please note that interpretation of the graphs can be more of an art than a science, often depending on prior experience. However, in general, wood quality (strength) can be evaluated with the Resistograph based on the height of the line on the chart. High lines or peaks indicate increased resistance and therefore denser (less deteriorated) wood. For deteriorated wood, there are often big variations, with an increased resistance (high peak) often occurring just before a pocket of decay (low valley). Subtle changes in the resolution of peaks often indicates incipient decay.

Resistograph test results are presented below as interpreted with comments. See "Appendix A: Existing Condition Drawings" for test locations. See "Appendix B: Resistograph Tests" for individual graphs associated with each test location.

Resistograph testing at east facade.



Resistograph reading at test location W-01. Note small hole left behind from drill.

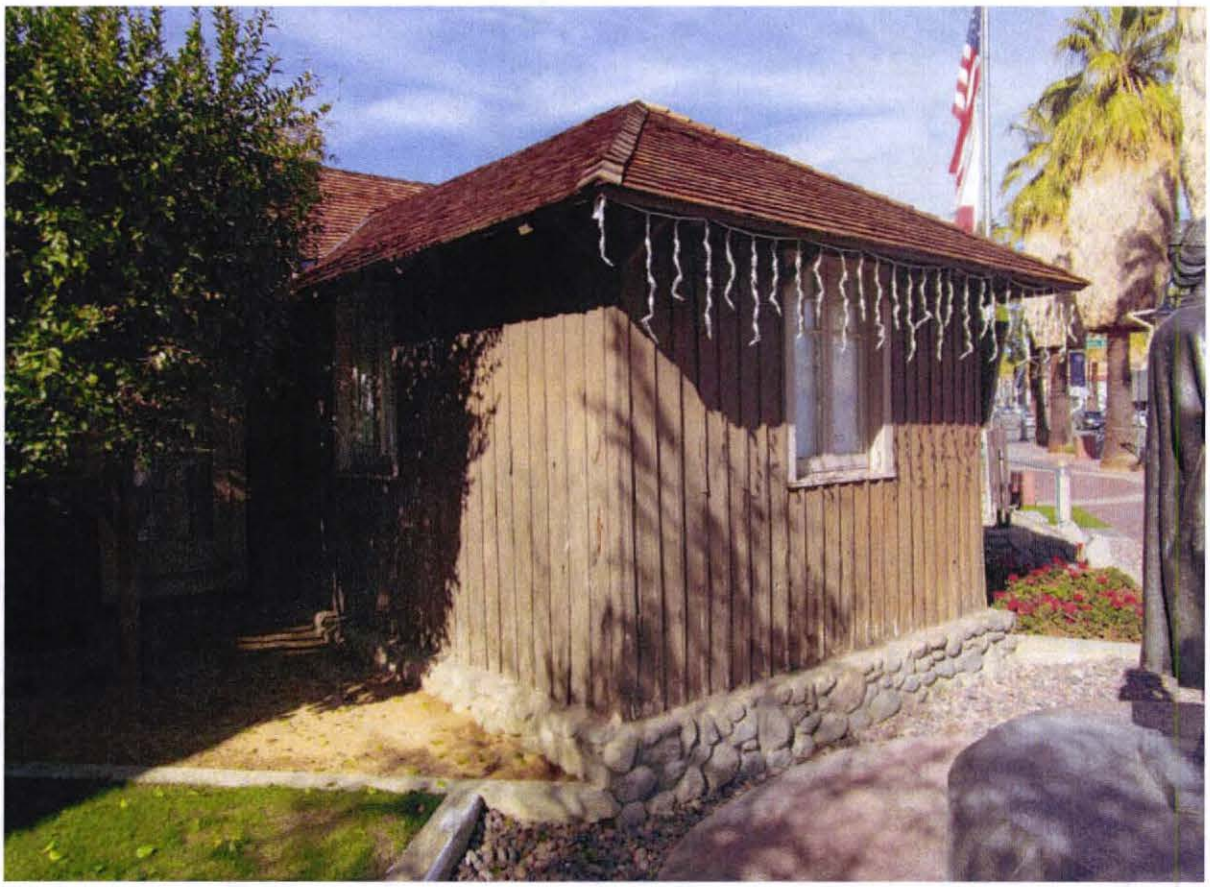
Moisture readings were taken with a Tramex MRH III moisture meter, using both the meter surface pads and insertable pin probe attachment. The pin probe penetrates the wood approximately 1/2-inch. In all reading locations, little to no moisture was detected. This, however, only reflects surface conditions, and does not read moisture levels deeper into the wood. In general, larger members can hold moisture for longer periods of time. Therefore, further testing is recommended using a conductance meter. This type of meter is more suited to large timbers and will provide a better indication of the internal moisture content. A conductance meter conducts electric current through the wood between two probes. The probes can be inserted into the wood to various depths.

WEST ELEVATION			
No.	**Wall Type**	**% Decay**	**Comments**
W-01	A-1	60	Decay throughout; slightly better condition at outer 1/2 inch
W-02	A-2	90	Heavy decay, no resistance noted beyond 2 inches
W-03	A-3	75	Decay fairly consistent through thickness; slightly better condition at outer 1/2 inch
W-04	A-4	50	Decay fairly consistent through thickness
W-05	A-1	75	Below window. Decay consistent through outer 2-1/2 inches; no resistance beyond (heavy decay)
W-06	A-1	50	Decay throughout; slightly better condition at inner 2 inches
W-07	A-2	50	Decay fairly consistent throughout; better condition at 1-1/2 to 2-1/2 inch depth
W-08	A-3	60	Decay fairly consistent through thickness
W-09	A-4	80	Heavy decay, consistent through entire thickness

NORTH ELEVATION			
No.	**Wall Type**	**% Decay**	**Comments**
N-01	B-1	50	Decay at siding; outer 3/4 inch depth in better condition than inner 1-inch. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)
N-02	B-1	50	Decay at siding; outer 3/4 inch depth in better condition than inner 1-inch. Framing member has some decay throughout, but relatively consistent through thickness
N-03	A-1	60	Decay throughout; slightly better condition at outer 1/2 inch; no resistance at inner 3/4 inch (gap or heavy decay)
N-04	A-2	80	Heavy decay at 1 to 2 inch depth; remainder deteriorated
N-05	A-3	60	Some decay throughout, but generally consistent through thickness
N-06	A-1	30	Some decay throughout, but generally consistent through thickness
N-07	A-2	40	Some decay throughout, but generally consistent through thickness; better condition at outer 1/2 inch
N-08	A-3	50	Decay fairly consistent through thickness; slightly better at inner 1-1/2 inches

EAST ELEVATION			
No.	**Wall Type**	**% Decay**	**Comments**
E-01	B-1	60	Decay at siding; pocket of heavy decay at 1 inch depth. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)
E-02	B-2	60	Decay at siding; pocket of heavy decay at 1 inch depth. Outer 3/4 inch depth in better condition than inner 1-inch. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)
E-03	B-1	50	Decay at siding; outer 3/4 inch depth in better condition than inner 1-inch. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)
E-04	B-1	60	Decay at siding; pocket of decay at 1 inch depth. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)
E-05	B-2	40	Decay at siding, but generally consistent through thickness. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)
E-06	A-1	80	Heavy decay at outer 2 inches; remainder deteriorated
E-07	A-2	90	Heavy decay, consistent through entire thickness
E-08	A-3	90	Heavy decay, consistent through entire thickness; slightly improved at outer 1/2 inch

SOUTH ELEVATION			
No.	**Wall Type**	**% Decay**	**Comments**
S-01	B-1	75	Decay at siding; large pocket of heavy decay at 1 to 1-1/2 inch depth. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)
S-02	B-1	50	Decay at siding; pocket of heavy decay at 1 inch depth. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)
S-03	B-1	60	Decay at siding; outer 3/4 inch depth in better condition than inner 1-inch. No resistance noted between 2 and 3-1/2-inch depth (suggests possible stud spacing, TBD)



Discussion

Exterior wood members and components at the Cornelia White House are in an advanced stage of decay. Wood decay, in general, follows a definite progression from sound wood to total loss of wood fiber. The early stages, known as incipient decay, are characterized by staining and discoloration, and an initial surface loss of integrity. There no voids present, and probing with a screwdriver reveals the surface as soft or "punky." As the decay progresses, small voids develop, extending primarily along the grain structure, and allowing for moisture to move more readily through the wood; this is known as intermediate decay. In the advanced stage of decay, large voids develop, often where the decay originated, and continue to extend further into the wood. This can lead to heavy losses of the cross section and can compromise the structural integrity of the wood member. Under loading conditions, this can lead to crushing failure. Due to this advanced decay state, it will be important to determine whether the existing wood can carry the required structural loads of the building. Further analysis by a structural engineer is needed to determine if additional structural strengthening is required.

Discussion

This advanced decay has developed over time from a combination of factors. Wood deterioration can be the result of physical processes, such as weathering, structural overloading, mechanical damage or shrinkage; or biological processes, including decay and insect attack. Weathering from cyclic wetting and drying, exposure to ultraviolet light, and erosion from wind-blown debris can all change the surface appearance of the wood, lightening and graying the color and eroding the grain structure at the surface. Decay is largely the result of moisture infiltration. Prolonged exposure to moisture can produce undesirable conditions and long-term maintenance concerns including rot and insect attack, warping and dimensional changes, stains and peeling paint. Roof and plumbing leaks, poor architectural detailing of flashings, poor ventilation, and inappropriate use of materials can all lead to trapped moisture within wood materials and instigate the deterioration. Wood will also decay when in contact with other materials, such as porous masonry, or with the ground. Without intervention, the decay can become a self-sustaining and progressive problem. Decayed wood can absorb and hold water far more readily than sound wood, and larger members can hold moisture for longer periods of time. Specifically, at the Cornelia White House, poor drainage, the use of sealants and a lack of adequate base flashings or waterproofing at the foundation wall have all directly contributed to the advanced decay at the base of the walls throughout the structure. Contributing to this is the general lack of maintenance, the stress from multiple relocations, poor previous repairs with inappropriate materials, and lack of surface water control including roof water and overspray from sprinklers.

Wood decay is caused by fungi, including brown rot, white rot and dry rot. These fungi break down the wood components over time, and can ultimately lead to a loss of structural integrity and failure. This can happen at the surface, or internally, creating sub-surface rotted voids which may or may not have any visible signs at the surface. Moisture absorption through end grain, checks, splits or holes can provide a favorable environment for decay fungi to attack the heartwood at the center of large timbers. Generally, if the moisture content of the wood is less than 20 percent, fungi are unable to grow and propagate. Moisture contents between 30 and 40 percent are highly favorable and an indication of advanced decay. Insects only need the moisture to be greater than 10 percent to be active. Luckily, there were no outward signs of recent insect activity or damage at the house.

In general, the simplest ways to control decay is through methods of keeping the materials dry. Maintain the roof regularly. Provide drainage control elements such as gutters and downspouts to carry roof water away from the building. Fix any roof or plumbing leaks quickly and take measures to dry out the materials. Redirect sprinkler heads or relocate them away from the building. Reduce any dense vegetation around the building. Inspect the foundation and crawl space regularly, and clear away any accumulated debris or soil buildup from erosion. Apply wood preservatives to protect against decay and insect attack. Apply water repellents with mildewcide additives that will not only kill active fungi but guard against future infection as well. And maintain protective paint coatings.

Discussion

Wood preservatives are highly recommended for controlling decay and insect attack, and were most likely used to originally treat the cross ties at the Cornelia White House. Railroad ties were historically treated with a creosote solution to increase their durability and service life. The solution was a pure coal tar product derived from tar produced by the carbonization of bituminous coal. This solution was often blended with a heavy petroleum oil to reduce the cost of the preservative.[3] Reportedly, an untreated cross tie will last about 5-1/2 years of use, whereas a creosote-treated cross tie can be in service in excess of 30 years. These creosote solutions are highly preventive against wood-destroying organisms, are relatively insoluble in water, and have good depth of penetration into the wood. They are also low cost and have a long history of use. Unfortunately, they have also been classified as a restricted-use pesticide by the EPA, and their uses are limited to those that do not involve frequent human contact due to their toxicity. They can harm both people and plants, have an unpleasant odor, and should never be used inside residences or inhabited structures. They are also a potential fire hazard; freshly treated timber can ignite easily and burn readily. Additionally, the oily preservative limits paint-ability, preventing good adhesion of paint coatings.

Any original creosote compounds used on the Cornelia White House cross ties have most likely leached out of the existing wood materials over the last century, and no longer pose any potential harm. However, samples should be taken to confirm what, if any, material remains. Contractors should also take precautions when cutting or handling the historic cross ties, in particular avoiding frequent or prolonged inhalation of sawdust. Personal protective equipment including goggles and dust masks should be used.

The existing wood materials at the Cornelia White House can be re-treated with a surface-applied wood preservative. This re-application is highly recommended to extend the life of the materials. There are water-borne solutions available that will provide comparable protection to the creosote compounds with fewer toxic risks. Borate-based compounds, specifically, are the most commonly used water-borne preservatives and can be successfully used in this application. They can be sprayed, brushed, or injected as surface treatments. They are also available as rods for time-lapsed delivery. Borate preservatives are derived from sodium borate, which is the same material used in laundry additives. And in other construction applications, they are used for pressure treatment and fire-retardant treatment of framing lumber. They penetrate deep into the wood, and will not affect subsequent painting, staining or gluing. They are not corrosive to most metal fasteners, although aluminum and galvanized metal may be affected if in proximity.

The prime advantage of using borate preservatives rather than other types is that they are effective against brown rot and white rot fungi and most wood-destroying insects while being relatively safe for both users and the environment. When used in above-ground applications, they remain stable unless exposed to standing water (they will leach out). Surface-applied borate preservatives will need to be used in conjunction with a water repellent which contains a mildewcide in order to prevent leaching and control any mildew. The water repellent specified should be formulated to be paintable. The water repellent will also extend the life of the paint coating by keeping the wood dry longer.

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3 The Tie Guide, Handbook for Commercial Timbers Used by the Cross tie Industry."

Discussion

Borate-based preservatives, when surface-applied will not penetrate below any painted surfaces. Therefore, the existing paint coatings at the Cornelia White House must be removed prior to treatment. This is actually beneficial since the existing paint coatings are in poor condition, and in some cases obscure underlying wood deterioration. The existing paint layers will need to be removed carefully, most likely with chemical strippers and hand removal methods. Field-testing of several commercial paint strippers will be necessary to determine their efficacy, application and removal methods, and dwell times. In general, strippers that are based primarily on N-methyl pyrrolidone (NMP) are recommended. This type of stripper is known from experience to swell and disrupt the paint layers with less damage to wood fibers than other types of strippers, such as alkaline systems. This type also requires less aggressive neutralizing and clearing methods than other types, such as those based on methylene chloride. Removal should be performed carefully with wooden and plastic hand tools to limit damage to wood fibers.

Once stripped, and prior to application of the wood preservative, the more highly degraded wood fibers and organic debris in rotted and insect-eaten areas can be removed using small hand tools such as wooden skewers and dry brushes. The "skeletal" remains of the wood structure and the exterior surfaces should be left intact as much as possible for later incorporation into epoxy repairs. Depending on the location and the level of decay, temporary shoring and/or structural stabilization may be required. Also at this time, old patching materials and epoxies should be mechanically removed with hand tools. The previous patches no longer serve their purpose, and contribute to the decay by trapping moisture in the wood.

Once the coatings, previous patches, and decay debris are removed and more of the extent of the deterioration is visible, additional survey will be necessary to determine which members will require which type of repair (or a combination thereof). It will be important at this time to determine thresholds for wood repair, delineating between wood that is considered acceptable to remain and can be treated with preservatives; wood that is deteriorated and can be repaired with epoxy methods; and wood that cannot be salvaged due to advanced decay or structural strength loss and will require replacement. Wood replacement can take the form of dutchmen repairs, partial or full replacement using in-kind lumber.

Epoxy repairs can be made with wood-compatible two-part epoxy patching compound, such as Abatron's WoodEpox. These compounds bond to the surface of the existing wood, filling cracks, holes and voids without shrinking or crumbling like common wood fillers. And when used in combination with an epoxy resin, such as Abatron's Liquid Wood, will consolidate the existing dried out, rotted or spongy wood during the repair process. The epoxy patches can also be sculpted and tooled at the surface to mimic the texture of the wood grain. And depending on the desired finish, they can be painted, stained or integrally pigmented to blend and visually minimize the repair.

Discussion

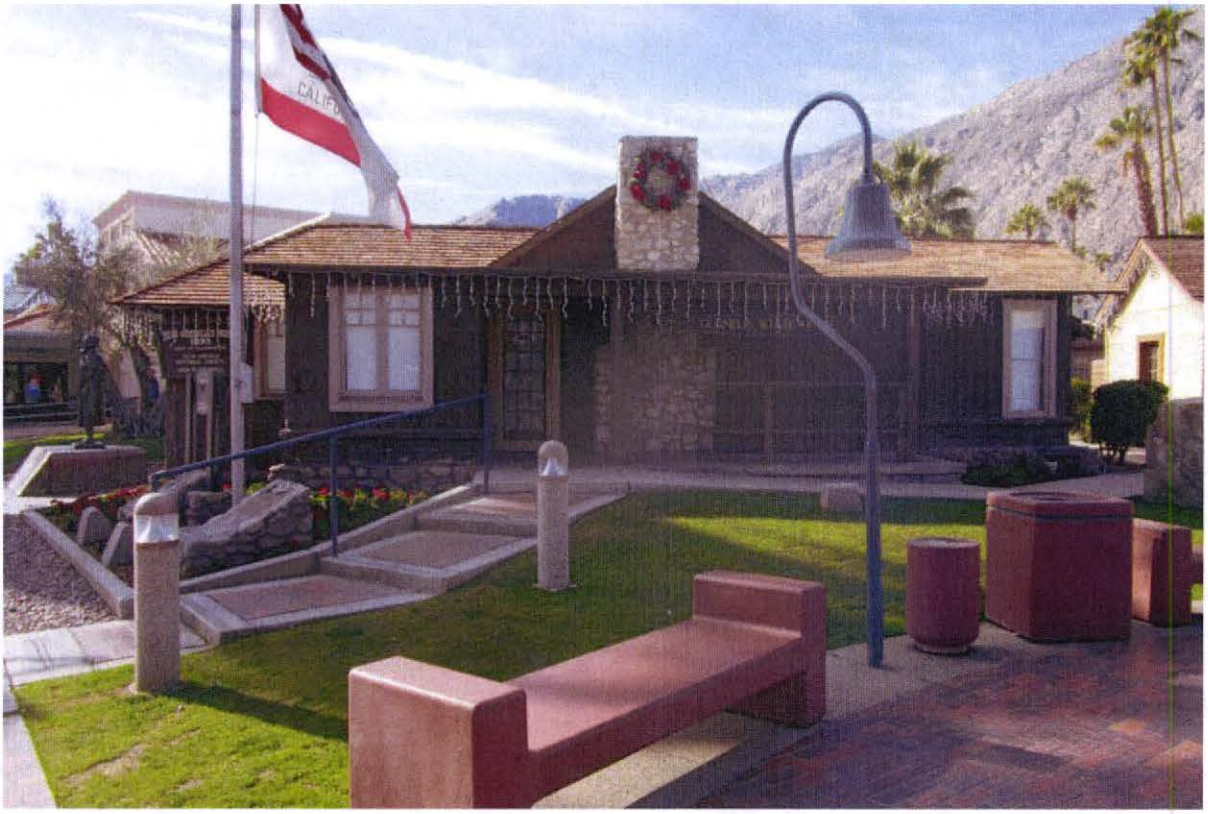
For wood that cannot be repaired with epoxy methods, there are several options for replacement depending on size, location, etc. The wood species of the Cornelia White House cross ties and siding is unknown at this time. It will be important in the repair process to match any new wood as closely as possible to the existing. Therefore, wood identification analysis of samples is needed prior to specifying any replacement wood. Historically, railroad ties varied widely in wood species depending on availability and climatic conditions. In the western states, wood species included California Black Oak, Oregon Oak, Douglas Fir, and a large group of western softwoods including pine, spruce, larch, cedar, fir, redwood, and hemlock.[4]

In addition to matching the species, new wood should be selected to be similar in grain pattern to the existing, and it should be fabricated to match as closely as possible the original dimensions, cuts, details, and finish. Cross tie repairs can include a dutchman repair, where only a small portion of a wood member is replaced; a partial or full face repair, where the interior decayed portion of the member is replaced while retaining the historic sound face material; an end repair, where the deteriorated end of a member is replaced; and a full replacement, where the entire decayed member is replaced with new wood. These repairs, including the epoxy repair method noted above, can be used for cross ties, as well as board-and-batten siding.

Unfortunately, wood repairs and preservative treatments alone will not be enough to preserve the Cornelia White House as it currently stands. There are a number of concerns, as previously mentioned, that have contributed to the decay and will continue to do so unless remedial measures are taken. In particular, poor drainage, the use of sealants at joints, and a lack of adequate base flashings at the foundation wall, have all contributed to the advanced state of decay at the base of the walls. In order to correct this, the foundation wall will need to be revised to include metal base flashings and/or a waterproof membrane separation between the wood walls and the masonry. The top surface of the foundation wall will also need to be corrected to slope away from the building. Other changes, such as installing gutters and downspouts and revising in ground sprinklers, will aid in controlling and directing water away from the building.

Another contributor to the decay observed is the current condition of the windows and doors. Decayed wood framing and trim, deteriorated glazing putty, broken glass and ill-fitting components all provide avenues for moisture infiltration and promote decay. The windows and doors will need to be carefully repaired, with particular attention paid to the incorporation of flashings at frame openings. Similarly, flashing will need to be incorporated at wall penetrations, such as the HVAC ductwork.

4 The Tie Guide, Handbook for Commercial Timbers Used by the Cross tie Industry."



Treatment Recommendations

The Cornelia White House will require significant intervention to address the substantial material deterioration and structural deficiencies observed. Previous schematic repairs proposed by IDC include re-cladding the building with new vertical board and batten siding and weather barriers, new galvanized base flashing at the base of new siding, and wood dutchmen repairs at the base of Type A walls. It is unclear from the plans how much, if any, stabilization of the deteriorated wood is proposed prior to re-cladding. These proposed interventions are extremely minimal in scope and ineffectual in addressing the level of decay present. They are also problematic from a preservation standpoint, and should not be considered an appropriate level of treatment for this historic building. The Secretary of the Interior's Guidelines cautions against "altering wood features which are important in defining the overall historic character of the building so that, as a result, the character is diminished," ..."failing to stabilize deteriorated or damaged wood," and ..."failing to identify, evaluate, and treat the causes of wood deterioration."[5] The woodwork at the Cornelia White House is a character-defining feature of the structure, and should be preserved through appropriate means. Re-cladding the existing walls obscures the original material from view and interpretation; adds thickness to the walls, prompting other modifications such as at window and door openings; and encapsulates the decay from view, making monitoring and future maintenance all but impossible.

5 Weeks, Kay D. and Anne E. Grimmer, Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstruction Historic Buildings, U.S. Department of the Interior, National Park Service, Washington, D.C., 1995.

Treatment Recommendations

We highly recommend a more comprehensive exterior restoration project be undertaken to address the decay and deficiencies at the Cornelia White House. We believe that this can be accomplished through a carefully considered approach to conservation of the existing materials, and with the goal of retaining as much historic fabric as is possible. Our treatment recommendations are as follows, including structural analysis, further investigation and testing, wood preservative treatments, wood repairs, and other recommended repairs and upgrades.

Structural Analysis

The cross tie structural members at the base of the exterior walls are in an advanced state of decay, particularly at building corners and east and west elevations. There are large voids and heavy losses of the cross section in some areas that have most likely compromised the structural integrity of the wood members. Under loading conditions, this can lead to crushing failure. Further structural analysis should be performed by a qualified structural engineer to determine whether the existing wood can carry the required structural loads of the building. The engineer can analyze the existing load-carrying capacity and determine where additional strengthening may be required. The engineer can also look more closely at foundation-to-wall and wall-to-roof connections, as well as lateral force resistance, to determine if additional seismic strengthening could be performed concurrent with the wood repairs. Seismic upgrades, up to this point, have not been considered of primary importance in relation to the level of material degradation; however, if invasive wood repairs and structural strengthening will be required to preserve the wood framing, and additional lateral force resistance could be introduced at the same time, it would be beneficial in the long run.

Further Investigation and Testing

Additional survey and testing is needed at the Cornelia White House in order to fully determine the scope of repairs and specify repair procedures. These should ideally be performed during the construction document preparation phase. They include the following:

1. Perform exploratory openings at select locations around the structure to confirm existing wall sections, details and wood condition. This will require careful removal and reinstallation of exterior siding materials to expose wall framing.
2. Perform a moisture survey with a conductance meter to confirm moisture levels in cross tie members. This will help determine the extent of the sub-surface decay.
3. Take samples of existing wood, and perform wood identification analysis to determine original wood species. This will aid in specifying replacement materials.
4. Analyze samples of original cross ties for remaining creosote compounds, if any. This will help guide contractors in personal protective equipment and methods for handling. Recommended handling procedures can be included in the project specifications.
5. Take samples and perform a historic finishes analysis to confirm original finishes, if possible. Due to the advanced decay state, this may be difficult. However, protected areas such as the porch may yield good results. Color matches for original paint colors can be specified. Also, if natural or stain finishes are found (not likely but should be confirmed), additional steps can be taken to visually integrate epoxy repairs and replacement wood to blend with the existing.

6. Field test several NMP-based commercial paint strippers at select locations to determine efficacy, application and removal methods, and dwell times. This information will be included in the specifications.

7. Perform a full window and door survey to determine the scope of treatment, and develop repair details. This may require minimal exploratory openings at select locations to confirm existing opening details and condition of framing members. Exploratory openings will be made through careful removal and reinstallation of exterior trim.

Wood Preservative Treatments

Surface-applied wood preservatives are highly recommended for controlling decay and preventing insect attack. Recommended surface preparation and treatment methods include the following:

1. Chemically strip and mechanically remove existing paint coatings from exterior wood surfaces. Methods to be based on conservator testing (see above). Remove carefully with wooden and plastic hand tools to limit damage to wood fibers.

2. Mechanically remove old patching materials and epoxies with hand tools.

3. Remove the more highly degraded wood fibers and organic debris in rotted and insect-eaten areas using small hand tools such as wooden skewers and dry brushes. The "skeletal" remains of the wood structure and the exterior surfaces should be left intact as much as possible for later incorporation into epoxy repairs. Depending on location and level of decay, temporary shoring and/or structural stabilization may be required.

4. Following removals, perform additional field survey to confirm which members will require which type of repair (or a combination thereof.)

5. Treat existing wood with a borate-based wood preservative and fungicidal treatment, such as Borrada LP Wood Preservative/ Insect Control (Control Solutions, Inc.) or Bora-Care Wood Treatment (Nisus Corp.) Brush solution into affected areas and in cavities until saturation (may take several applications.) Wood will look wet and dark in color after treatment; however, this will diminish within a few days. Full evaporation of the moisture from this treatment should be completed prior to starting wood repairs.

6. Install borate rods at the base of the walls for continued protection from insect attack. The rods, such as System Three Resins "Bor8" line (formerly Impel Rods) are available in varying sizes depending on the wood member size to be treated. They can be inserted at intervals along the length of the walls, recessed 1/4-inch below the surface, and the hole filled with the epoxy filler. It should be noted that the DOT can corrode aluminum and galvanized metal, so they should be located away from any fasteners, fittings, etc. that could be affected should enough water penetrate the wood to activate the rods.

7. Prior to painting, apply a clear, paintable water-repellant containing a mildewcide, such as Rust-Oleum Wolman WoodLife Classic or similar.

8. Following all repairs and preservative treatments, re-paint all exposed wood surfaces with a high quality wood primer and high quality exterior paint.

Wood Repairs

Wood repairs are generally divided into wood that can be stabilized and repaired with epoxy methods, and wood that must be replaced (in whole or in part) due to advanced decay or structural strength loss.

Epoxy Repair Methods

See "Appendix C: Epoxy Repair Method" for sample photographs of treatment steps.

1. Consolidate decay and excavated areas with a solution of Liquid Wood (Abatron, Inc.), a two-part penetrating epoxy resin, diluted 1:1 by volume with isopropyl alcohol. Brush the solution into the affected areas to saturation, and then follow within 10-20 minutes after with a mixed, undiluted solution of the Liquid Wood. Immediately remove any excess material and drips from exterior surfaces with acetone immediately following applications; otherwise, a shiny residue will develop on the surface.

2. While the Liquid Wood is still tacky (not fully cured), fill voids and larger splits with WoodEpox (Abatron, Inc.), a specially formulated two-part epoxy patching compound. Mix the WoodEpox first into a slurry or runny paste by adding Liquid Wood (1:1 by volume). Brush and work this slurry into the deepest crevices and recesses.

3. Before the slurry cures, fill cavities, voids and splits with undiluted WoodEpox. Work into voids and recesses with artist spatulas and other hand tools. Build out losses as required to level with existing surrounding wood surfaces.

4. While the epoxy is still workable and not fully cured, shape and sculpt the patches to blend with the existing surfaces. Use small hand tools, such as wood skewers, dental picks and artist spatulas, to texture the patches to mimic wood grain. Please note, it is intended that epoxy patches behave in dimensionally the same manner as the wood member. Scoring or otherwise including planes of weakness within the dimension of the patch, corresponding with similar features of the wood will help ensure that the patch can behave similarly, expanding and contracting along with the wood member.

5. After the patches have cured, additional shaping with rasps, woodworking chisels, sandpaper, and metal tools can be completed as desired; however this is more difficult to do than when still workable. Sanding will open up the inherent porosity of the epoxy, ensuring it takes stains and consolidants in a similar manner to the wood, and help to facilitate breathability.

6. Please note: These recommendations assume that the desired new finish will be paint. If natural or stain finishes are found to be the original finish, additional steps can be taken to integrally pigment the epoxy fills, and visually integrate epoxy repairs and replacement wood using dye stains and faux finishing techniques.

Wood Replacement Methods

The following are repair methods with replacement wood. The repairs will vary in size and location, and should be determined by the conservator in the field (see "Wood Preservative Treatments" section, no. 4 above for more information on additional survey). New wood should match the existing species, grade, size, details, grain and finish as closely as possible. The repair methods are as follows. See "Appendix D: Wood Repair Details" for schematic repair drawings.

1. Dutchman Repair: Replacement of a small portion of a wood member, partial thickness. Size will vary depending on the level of decay. Dutchmen to be set in epoxy.
2. Face Replacement (New Interior Wood): Replacement of the interior decayed portion of the member while retaining the historic sound face material. This will require removing the member (or portion of the member), cutting away the decay, prepping the new lumber, attaching the sound historic face with epoxy, and reinstalling the repaired member. This repair can vary in length, depending on amount of decay.
3. Face Replacement (New Exterior Wood): Similar to above, this is for replacement of the exterior decayed portion of the member while retaining the historic sound material behind. This will require cutting away the decayed face material, prepping the new lumber, and attaching with epoxy.
4. End Replacement: Replacement of a deteriorated end of a wood member. This will require removing the deteriorated material to sound wood, and prepping the remaining sound wood to fit and install a new piece with a lap or angled joint. New wood to be anchored with fiberglas rods set in epoxy.
5. Infill Replacement: Replacement of a portion of a wood member, full thickness. This will require removing the decayed portion of the member, prepping the new wood to fit, and installing with fiberglas rods set in epoxy.
6. Full Replacement: Replacement of existing decayed member with new wood. This will require removing the deteriorated member, and installing a new one, using similar joints, anchorage, etc. This may require additional anchorage based on structural engineer's recommendations.
7. Repairs to board siding and batten trim may be similarly repaired through epoxy methods or partial or full replacement pieces.

   Please note: Temporary shoring and/or stabilization will be required during the repair process for structural cross ties and other framing members.

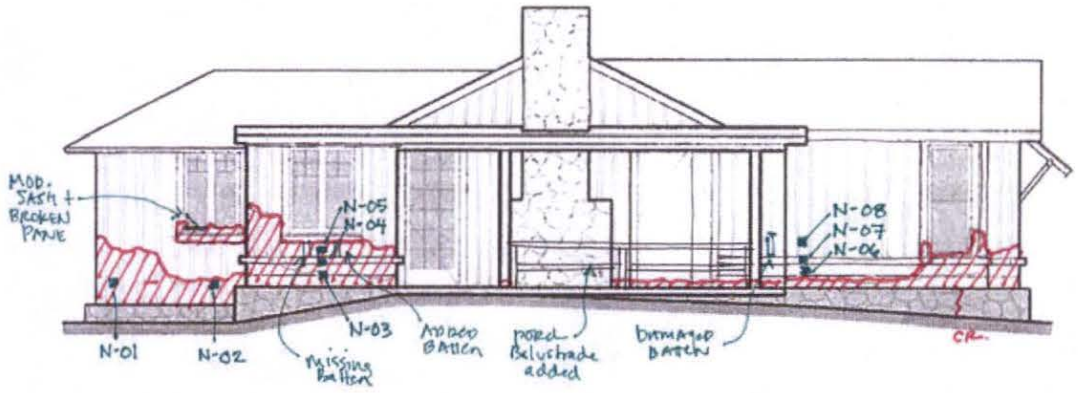
Other Recommended Repairs and Upgrades

In addition to the above wood repairs and preservative treatments, there are other contributing conditions that should be corrected or repaired to prevent future decay. These include the following:

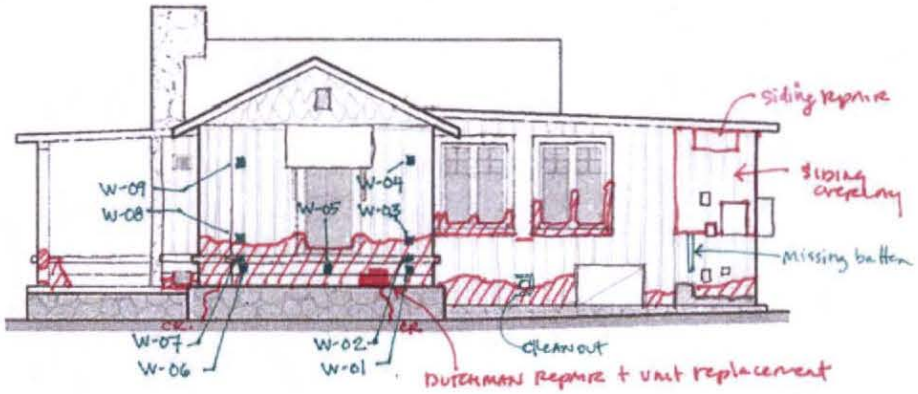
1. Revise foundation wall design to include metal flashing and/or waterproof membrane separation between the wood walls and the concrete/stone wall. Correct top of foundation wall to provide slope away from building.
2. Revise concrete slab detail at southwest corner near kitchen entrance. Provide below-grade waterproofing, flashings, etc. for protection of wood framing.
3. Repair windows and doors based on additional survey. Repair wood deterioration, incorporate concealed membrane flashing at window openings and sills, repaint, re-glaze with new putty, and repair hardware/ adjust operability as required. If desired, install UV films as glass for additional UV protection of collections. Replace kitchen door with historically appropriate new wood door.
4. Revise wall detail at HVAC chase penetration to include through-wall flashing and/or other waterproofing at termination with siding.
5. Install new low-profile gutters at eaves, and downspouts.
6. Redirect, modify and/or relocate sprinkler heads as needed to avoid spray of building walls.
7. Repair wood fence at mechanical area. Revise fence detail to remove wall connections at the southwest corner of the dining room.

Appendix A: Existing Condition Drawings

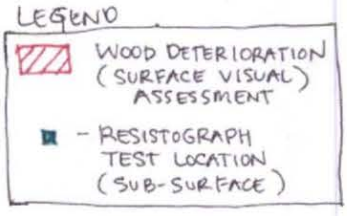
Appendix A



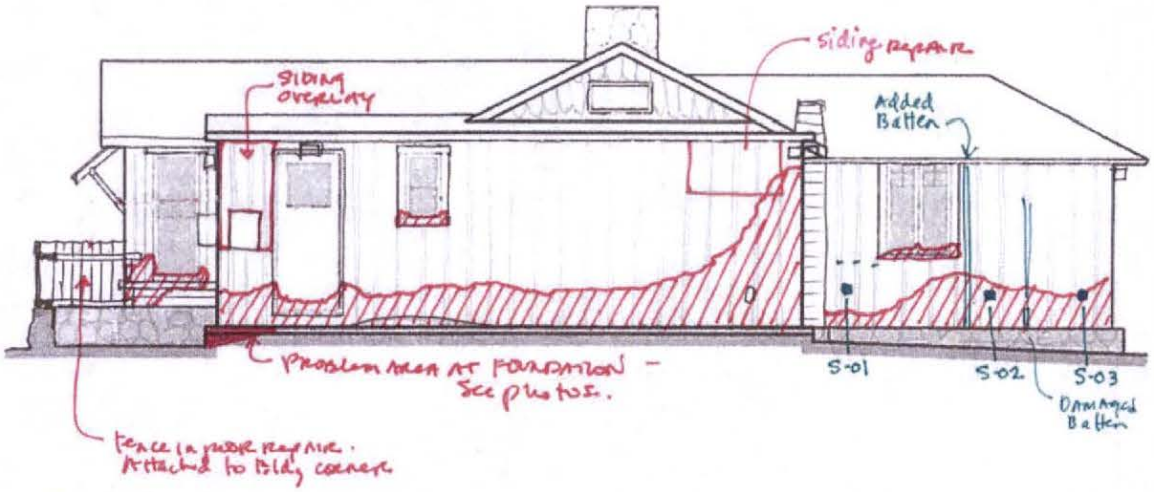
North Elevation



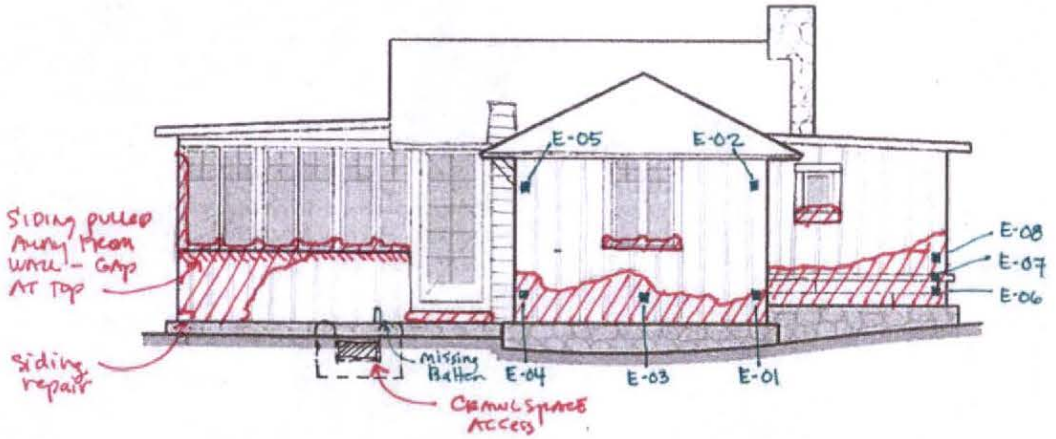
West Elevation



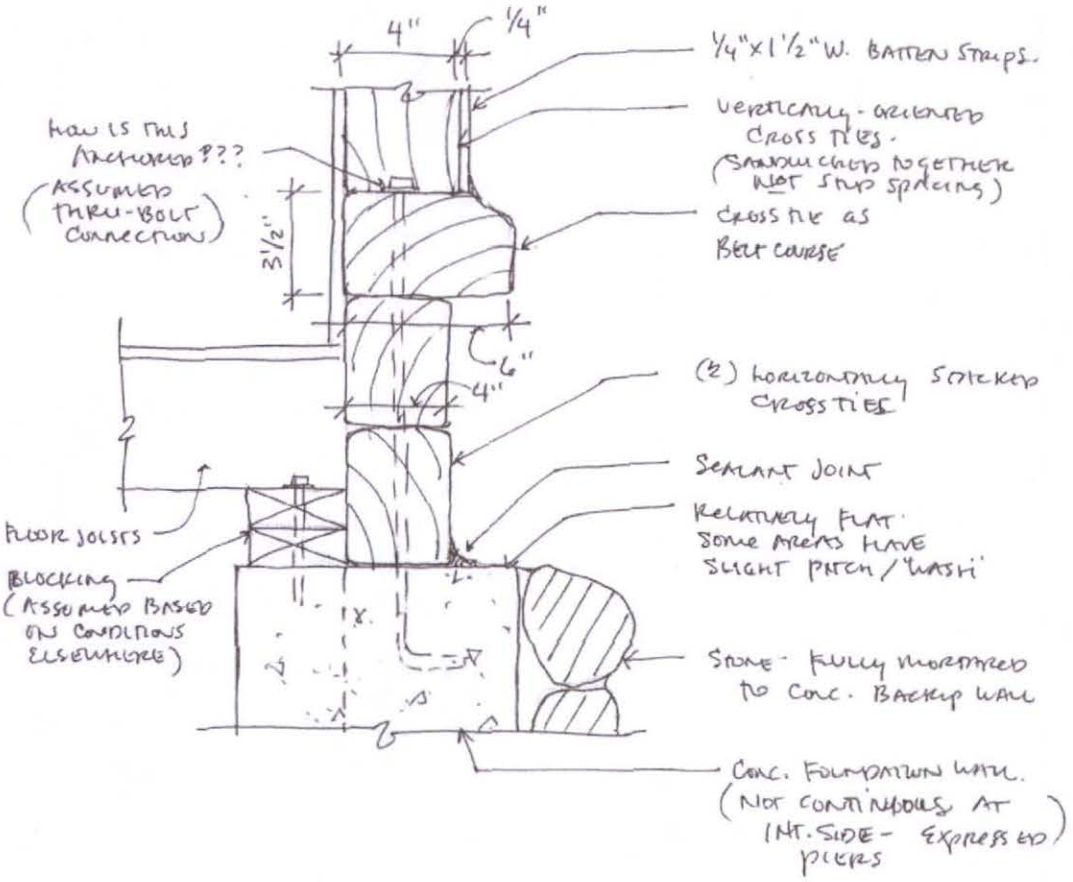
Appendix A



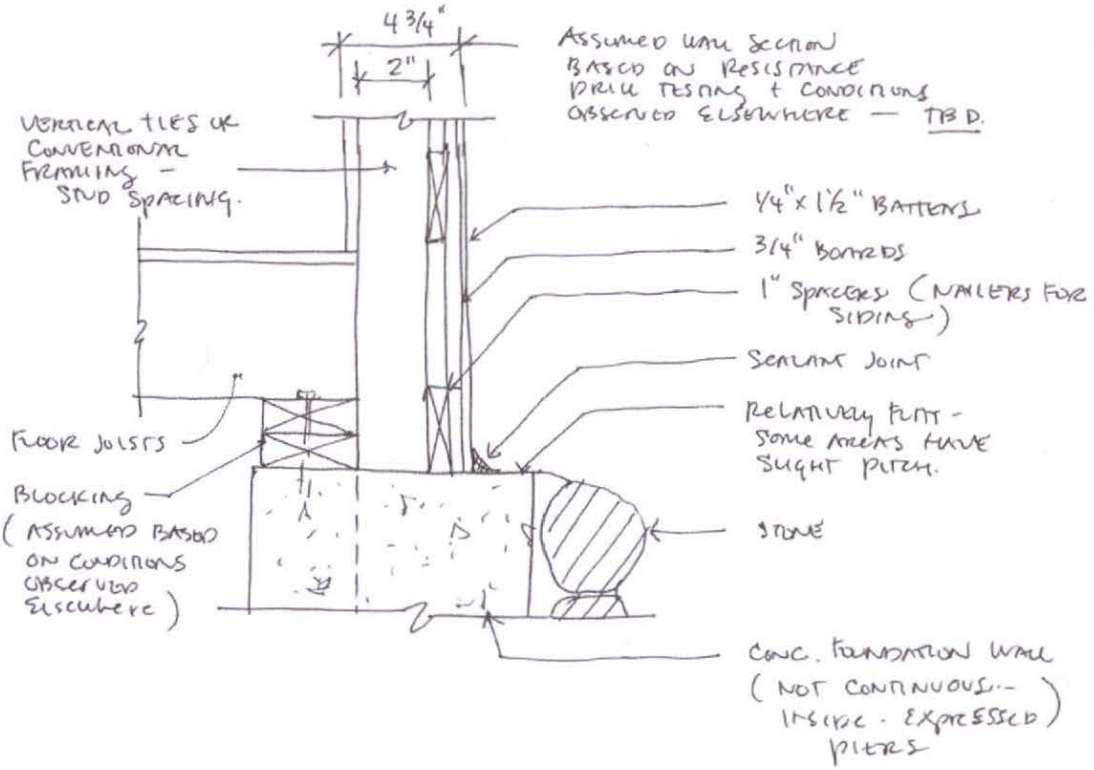
South Elevation



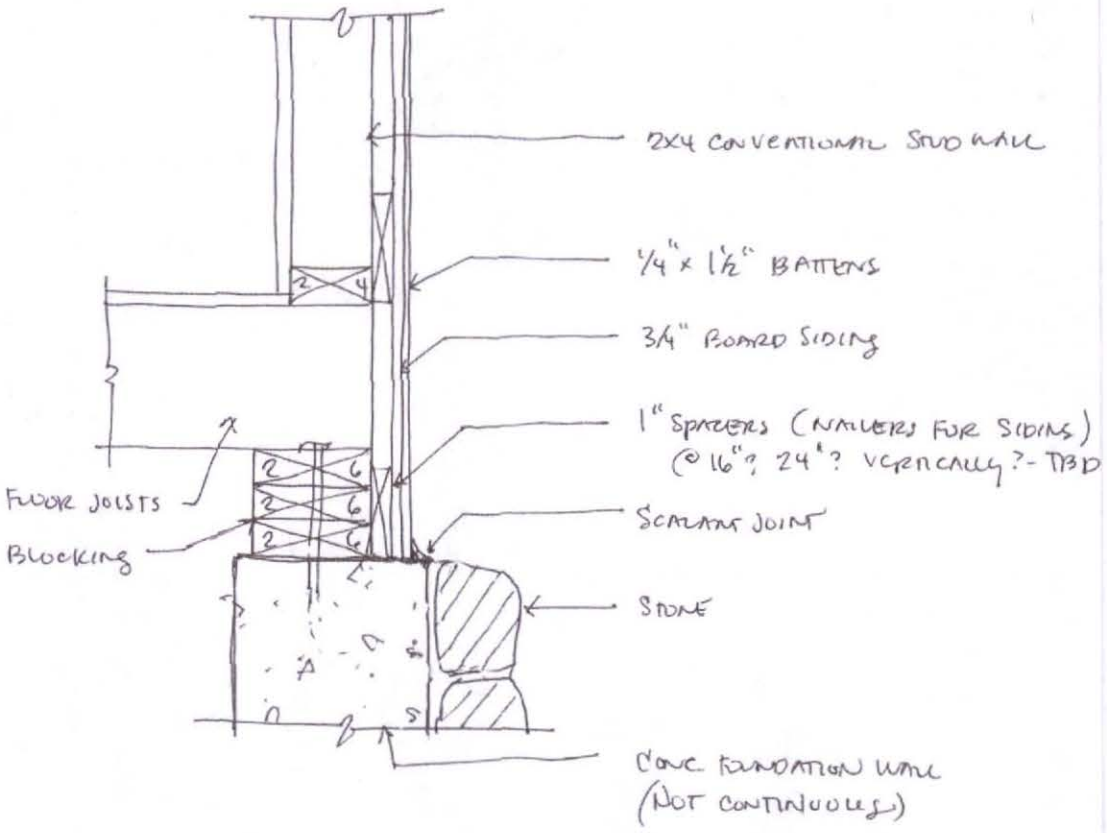
East Elevation



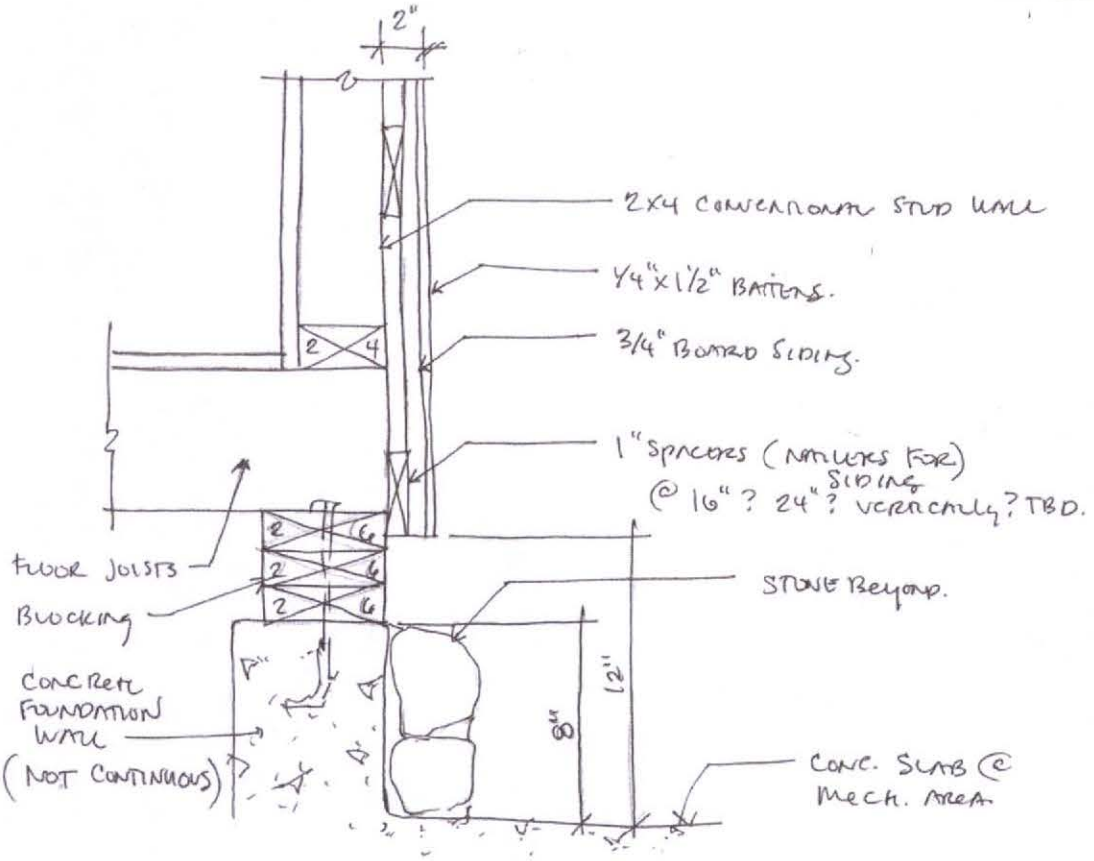
Type "A" Wall Detail



Type "B" Wall Detail



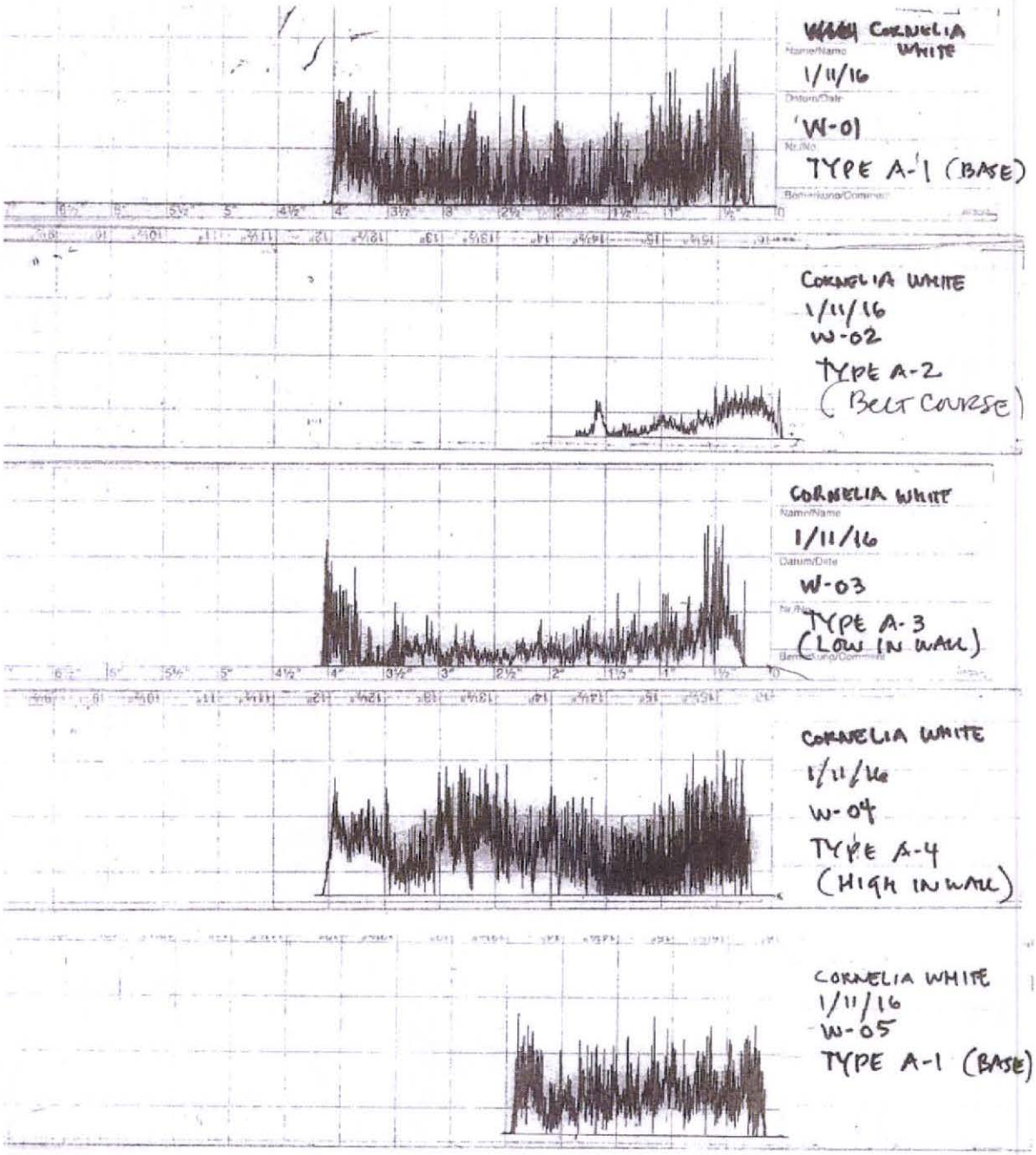
Type "C" Wall Detail



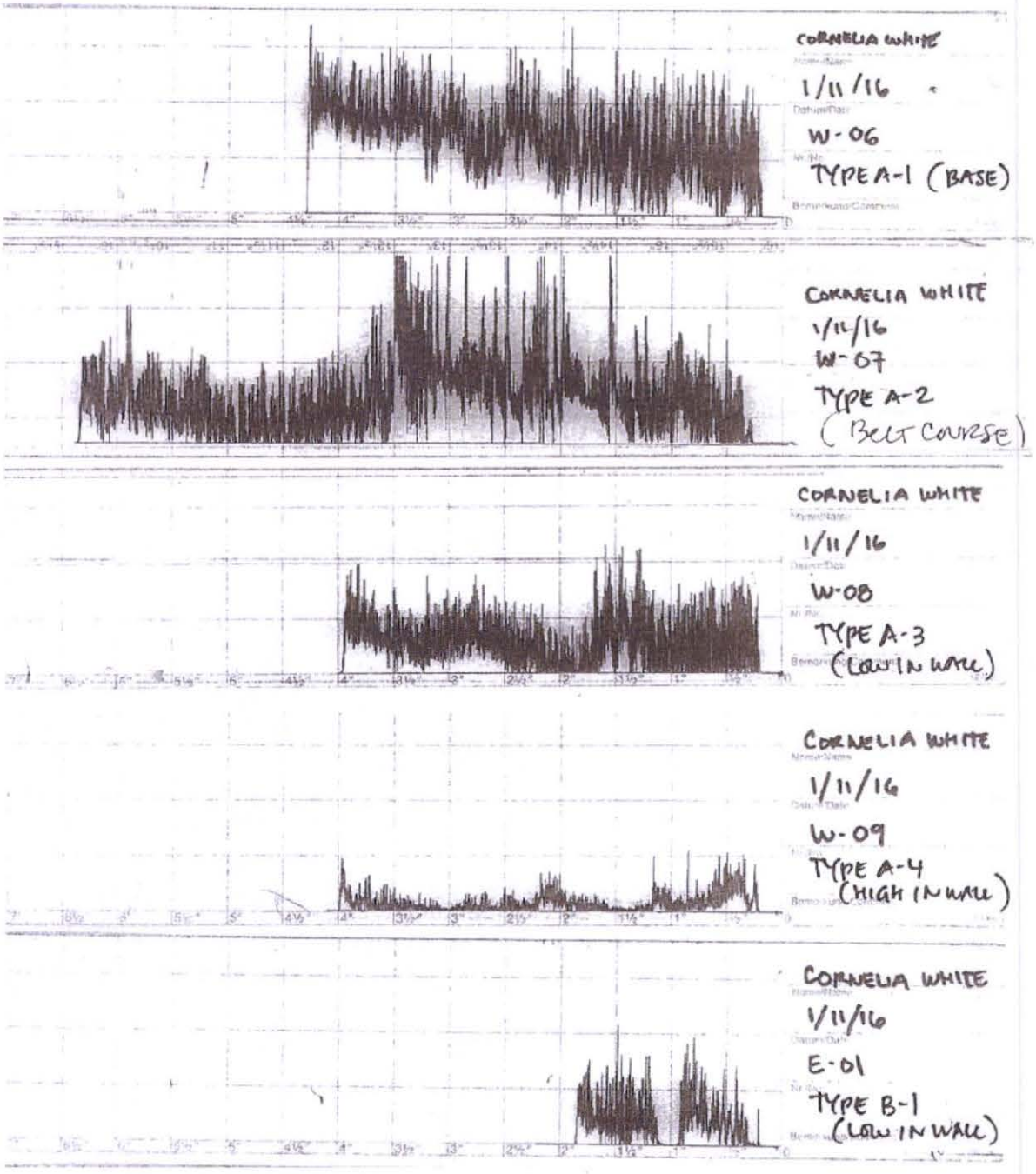
Type "C" Wall Detail at Mechanical Area

Appendix B: Resistograph Tests

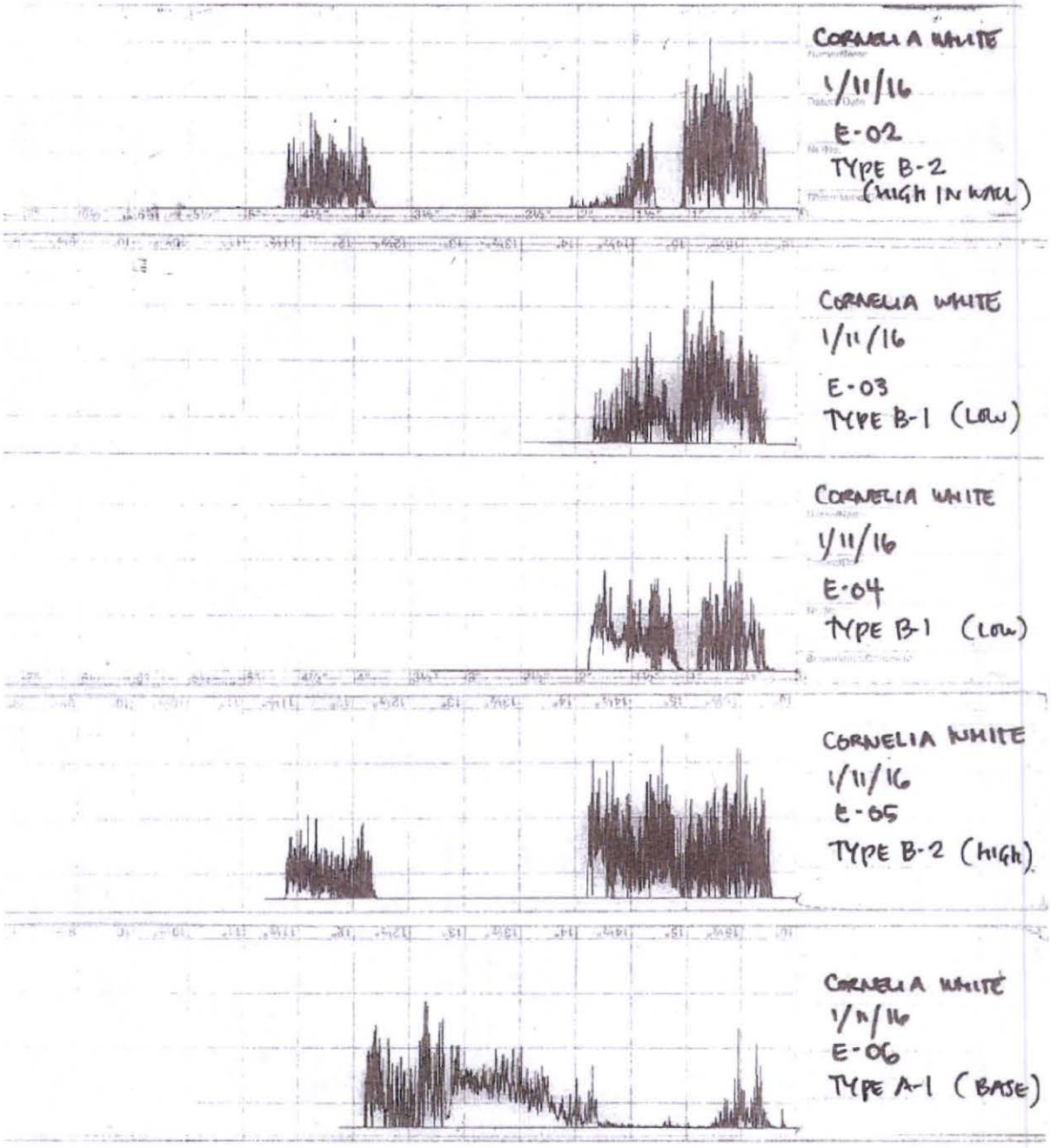
Appendix B


CORNELIA WHITE
1/11/16
W-01
TYPE A-1 (BASE)
CORNELIA WHITE
1/11/16
W-02
TYPE A-2
(BELT COURSE)
CORNELIA WHITE
1/11/16
W-03
TYPE A-3
(LOW IN WALL)
CORNELIA WHITE
1/11/16
W-04
TYPE A-4
(HIGH IN WALL)
CORNELIA WHITE
1/11/16
W-05
TYPE A-1 (BASE)

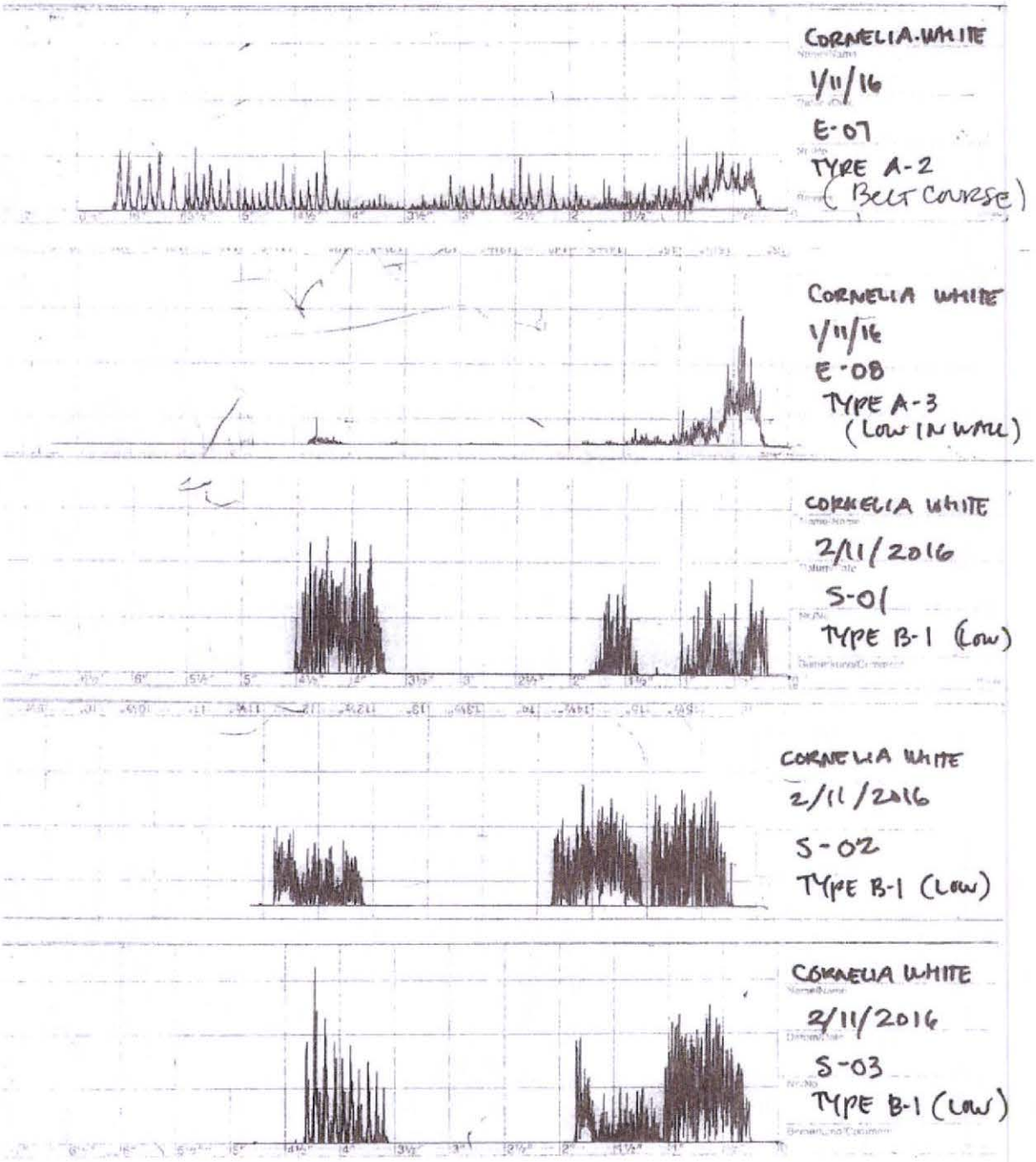
Appendix B


CORNELIA WHITE
1/11/16
W-06
TYPE A-1 (BASE)
CORNELIA WHITE
1/11/16
W-07
TYPE A-2
(BELT COURSE)
CORNELIA WHITE
1/11/16
W-08
TYPE A-3
(LOW IN WALL)
CORNELIA WHITE
1/11/16
W-09
TYPE A-4
(HIGH IN WALL)
CORNELIA WHITE
1/11/16
E-01
TYPE B-1
(LOW IN WALL)

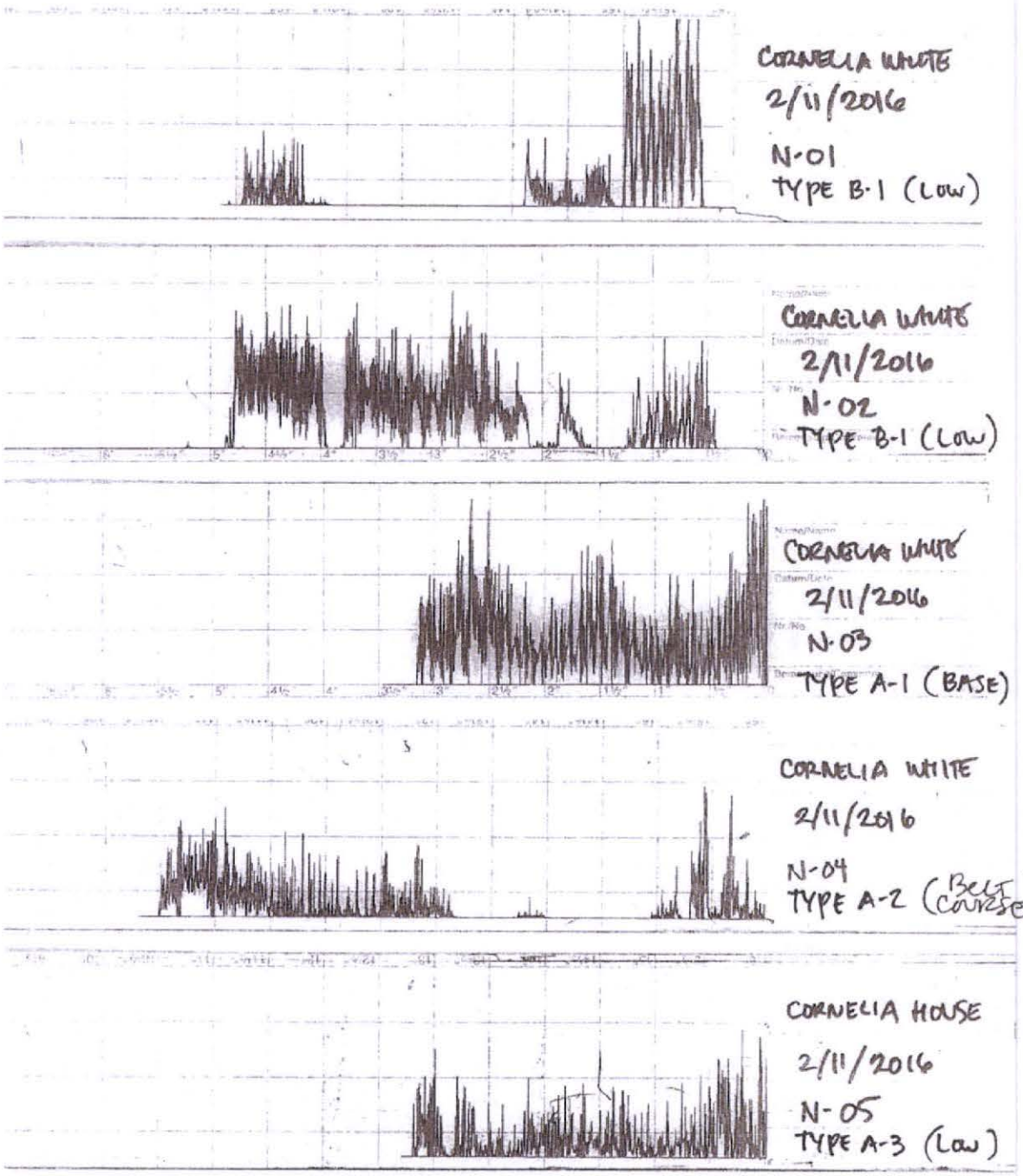
Appendix B


CORNELIA WHITE
1/11/16
E-02
TYPE B-2
(HIGH IN WALL)
CORNELIA WHITE
1/11/16
E-03
TYPE B-1 (LOW)
CORNELIA WHITE
1/11/16
E-04
TYPE B-1 (LOW)
CORNELIA WHITE
1/11/16
E-05
TYPE B-2 (HIGH)
CORNELIA WHITE
1/11/16
E-06
TYPE A-1 (BASE)

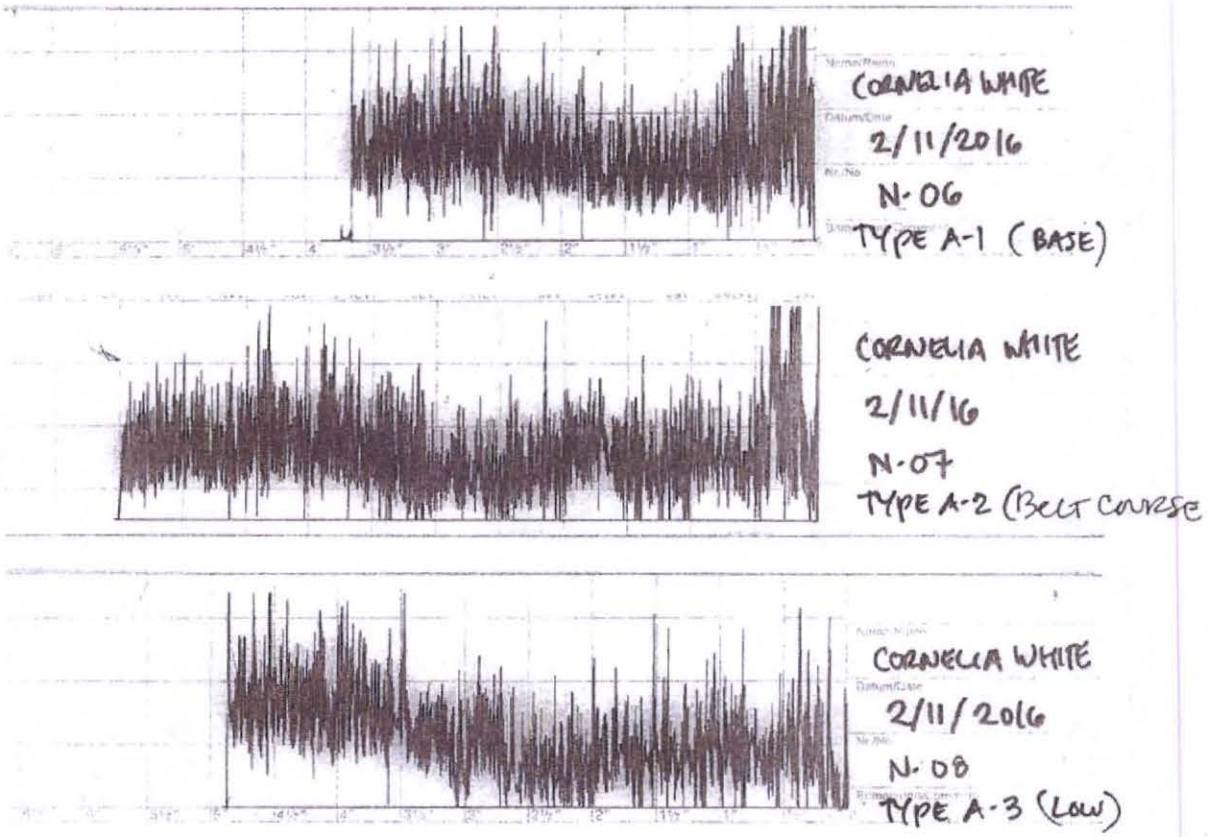
Appendix B


CORNELIA WHITE
1/11/16
E-07
TYPE A-2
(BELT COURSE)
CORNELIA WHITE
1/11/16
E-08
TYPE A-3
(LOW IN WALL)
CORNELIA WHITE
2/11/2016
S-01
TYPE B-1 (LOW)
CORNELIA WHITE
2/11/2016
S-02
TYPE B-1 (LOW)
CORNELIA WHITE
2/11/2016
S-03
TYPE B-1 (LOW)

Appendix B


CORNELIA WHITE
2/11/2016
N-01
TYPE B-1 (LOW)
CORNELIA WHITE
2/11/2016
N-02
TYPE B-1 (LOW)
CORNELIA WHITE
2/11/2016
N-03
TYPE A-1 (BASE)
CORNELIA WHITE
2/11/2016
N-04
TYPE A-2 (BELT COURSE)
CORNELIA HOUSE
2/11/2016
N-05
TYPE A-3 (LOW)

Appendix B


CORNELIA WHITE
2/11/2016
N-06
TYPE A-1 (BASE)
CORNELIA WHITE
2/11/16
N-07
TYPE A-2 (BELT COURSE
CORNELIA WHITE
2/11/2016
N-08
TYPE A-3 (LOW)

Appendix C: Sample Epoxy Repair Method

Appendix C

Sample Epoxy Repair Method

1. Rafter prior to treatment.

2. Application of chemical stripper.

3. Mechanical removal of decayed wood.

4. Application of borate-based wood preservative.

5. Application of Liquid Wood consolidation treatment.

6. Removal of excess at surface with acetone.

Appendix C

7. Color tests using dry pigments to integrally pigment WoodEpox epoxy fill (Not applicable if painting.)

8. Filling voids with WoodEpox epoxy filler.

9. Epoxy fill being shaped to match rafter tail end.

10. Epoxy fill being tooled to mimic wood grain.

11. Drilling hole to for borate rod.

12. Inserting borate rod. Set 1/4-inch below surface.

Appendix C

13. Completed epoxy fill at borate rod.

14. Sanding of epoxy fill.

15. Additional tooling of epoxy fill surface.

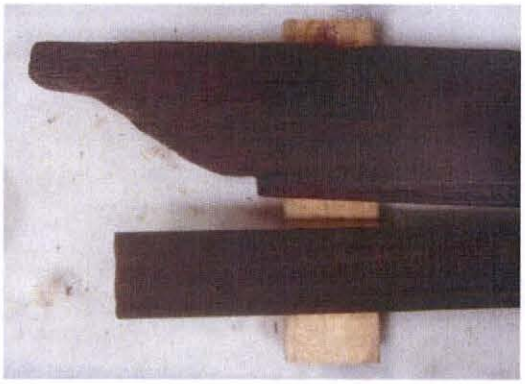
16. Application of dye stain. (Not applicable for painted finish)

17. Brushing in additional stain wet-on-wet for further visual integration. (Not applicable for painted finish)

18. Dabbing with rag to add texture. (Not applicable for painted finish)

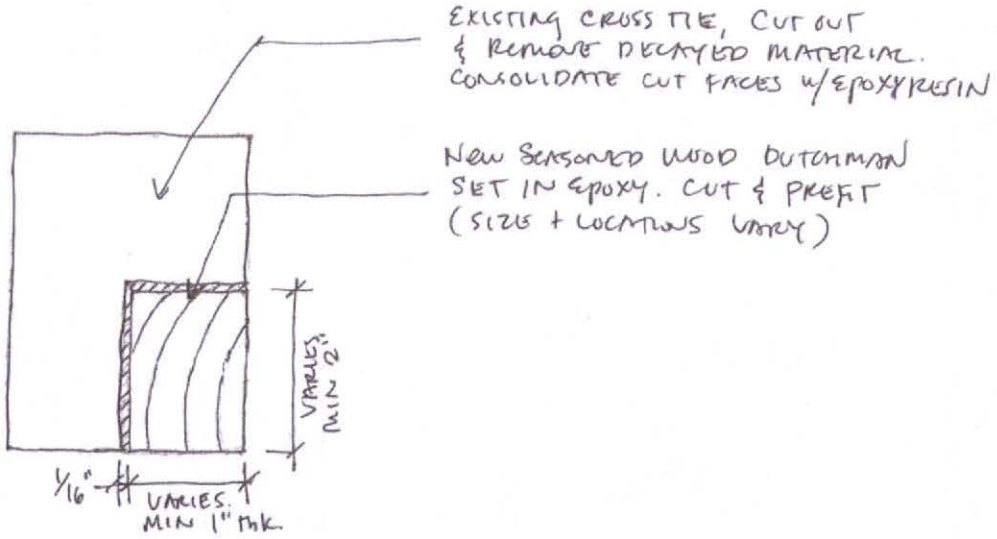
Appendix C

19. Completed rafter repair.

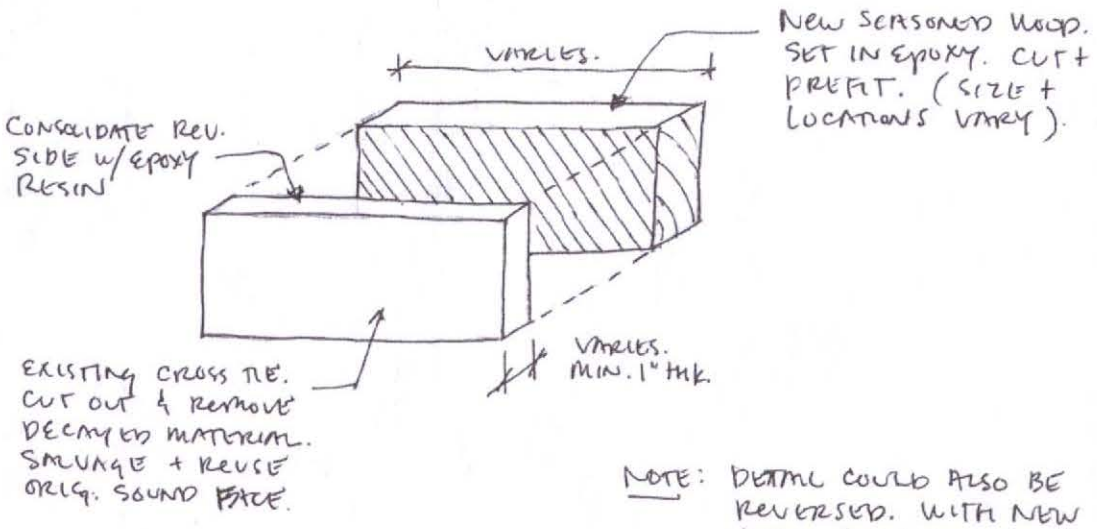


20. Completed rafter repair.

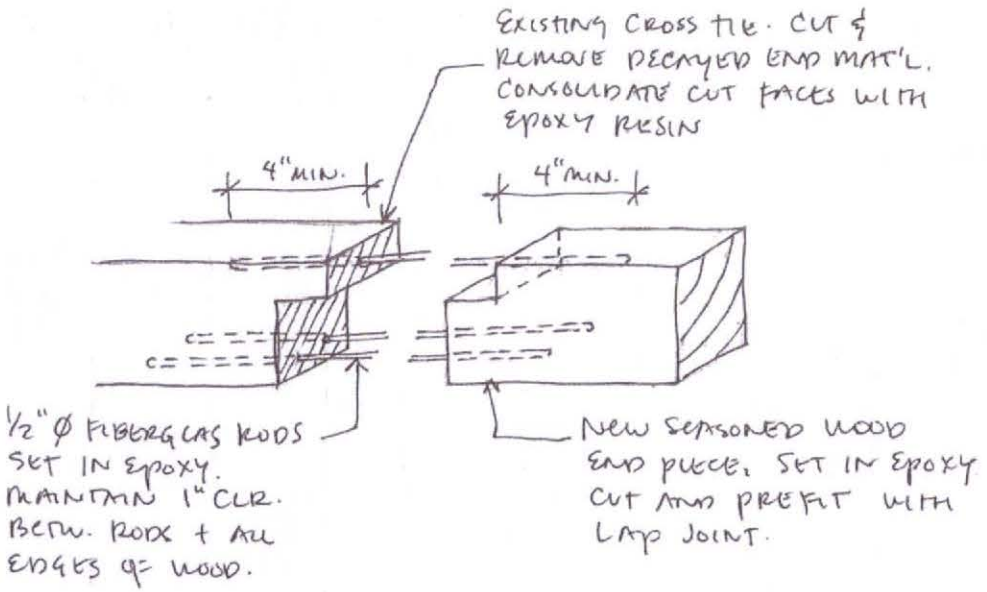
Appendix D: Wood Repair Details



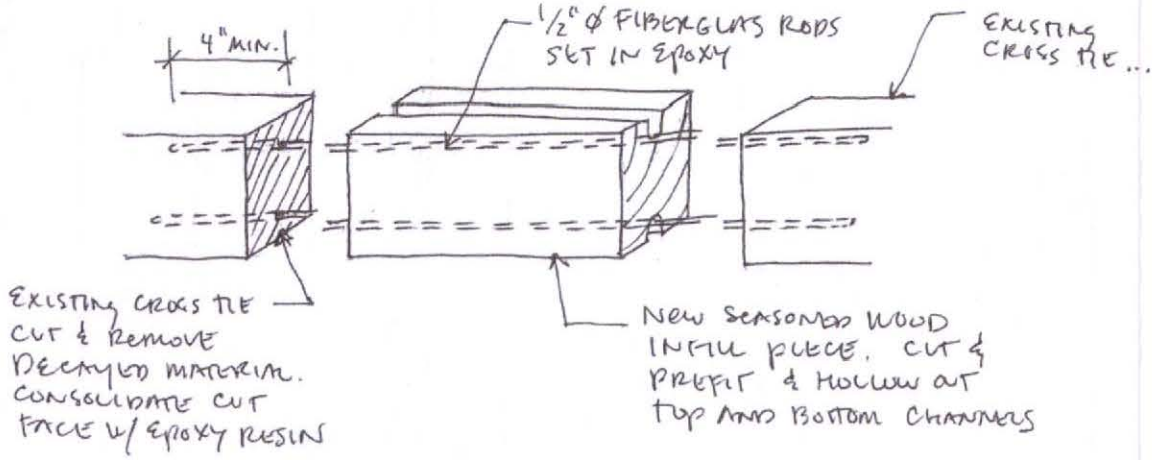
Typical Dutchman Repair



Typical Face Repair



Typical End Repair



Typical Infill Repair

General Notes (All Repairs):
1. Prior to work, carefully document existing conditions.
2. Provide temporary shoring as required to facilitate repairs.
3. Take care to match existing wood species, grade, finish, direction and pattern of grain.

ATTACHMENT 3

August 12, 2016

Sarah Devan
Architectural Resources Group
65 N. Raymond Avenue, Suite 220
Pasadena, CA 91103

Reference: **PRELIMINARY STRUCTURAL EVALUATION AND HISTORIC STRUCTURES REPORT OF CORNELIA WHITE HOUSE PALM SPRINGS, CALIFORNIA [SF PROJECT #16125]**

Dear Sarah:

It is our pleasure to provide this report of our findings regarding the Cornelia White House located in Palm Springs, California. This report is provided per our May 17, 2016 proposal to you.

The intent of this study is to provide the owner with relevant information and recommendations regarding the condition of the existing residence. According to the records, the house was originally constructed on another site in 1893. The structure was relocated in 1944, and relocated again to its present location at 221 South Palm Canyon Drive in 1979.

Reviewed Documents:

- Exterior Investigation Report – Cornelia White House, March 18, 2016 prepared by ARG.

Building Description

The house was reportedly constructed in 1893 and included framing members of "railroad ties that were salvaged from an abandoned narrow-gauge rail line". The original portion of the house has a pitched roof and the portion of the house with a flat roof is and undated addition to the original structure. The exterior walls of the original portion of the house are composed of horizontal railroad ties stacked horizontally at the base, then stacked vertically above. The roof framing is not visible. The perimeter foundation walls appear to be constructed of cast-in-place concrete (reinforcing is unknown) and faced with river rock. The width and depth of the perimeter foundation wall is unknown. The interior foundations supporting interior posts and cripple walls consist of miscellaneous conditions such as wood piers bearing on a loose CMU block, some posts bearing in soil, some bearing on "temporary" metal tripod supports, and other substandard conditions. There is a large stone fireplace and chimney in the living

room and another smaller exterior chimney, appearing to consist of adobe units, in the corner between the bedroom and "second room".

Observations

- The foundations of the building are not adequate to provide competent support for the structure and do not meet the current International Building Code requirements, or the lower requirements of the California Historical Building Code. Presumably, the foundations were constructed as part of the 1979 relocation of the building, but they do not appear to meet the building code in affect at that time. The perimeter foundations are mostly continuous, but the reinforcing is unknown, and no anchors between the framing and the foundation wall was observed. The interior framing bears on several different conditions, but none appear to have been engineered or meet any minimal code requirements.
- The stone fireplace and chimney were likely constructed as part of the 1979 relocation project. It is not known if the structure contains any steel reinforcing bars. Although the building location is of lower seismicity than other regions in California, some anchorage between the chimney and roof framing is required to resist lateral loads. Interestingly, the area's wind load on the house may even govern the lateral load demand on the chimney and improved anchorage between chimney and roof framing will also improve the overall structure's performance during high wind events.
- The smaller adobe chimney on the exterior of the building is susceptible to lateral loads and weathering and it should be anchored to the building.
- The walls in the original portion of the house (labeled as Type A in the ARG report) are composed of horizontally stacked railroad ties at the base (generally about 2 layers), then a belt course on top and vertically stacked railroad ties above. Observations of the exterior surface show that some portions of the exterior are extremely weathered and decayed and it is likely that further damage can be found within the wall. There is obvious decay at the base of the walls where in contact with the top of the foundation wall. Numerous miscellaneous past repairs including installation of inserted "dutchman" and some epoxy patching is noted. The configuration of these railroad tie walls has an inherent out-of-plane instability due to the hinge point at the belt course level.
- The Type B and Type C walls are stud framed walls covered in vertical board-and-batten siding. In general, the siding is in very poor condition. It is likely that the wood studs behind the siding is in fair to poor condition. There is obvious decay at the base of the walls where in contact with the top of the foundation wall.
- There is some minor settling as noted by the slight tilt in some areas of the floor and some minor cracking of the interior finish of the walls.

Recommendations (In order of priority)

Priority	Recommendation
1.	The entire structure should be inspected by a qualified pest control company to determine the extent of pest damage as well as wood decay.
2.	The foundations should be either replaced or retrofitted to provide a more stable base for the structure. The existing perimeter concrete foundations can probably be salvaged, but the walls above need to be anchored positively to the stem walls using a *Universal Foundation Plate* by Simpson Strong-Tie, or similar. (A photo is provided in the appendix to this report.) The interior foundations need to be completely replaced with new precast concrete pads and adequately anchored to the floor framing.
3.	The small adobe chimney should be retrofitted by adding vertical reinforcing bars and filling with grout to strengthen the section, and should be anchored to the roof to prevent it from toppling.
4.	The stone fireplace and chimney should be fully inspected for any signs of damage before use. It is assumed that the chimney is under-reinforced, and it should be anchored into the structure at the roof level and at the porch roof level to prevent it from toppling during lateral shaking (seismic or high winds). If the flue is damaged, it should be repaired if it is to be operational.
5.	The porch roof connections to the main structure should be supplemented with straps to ensure no separation and loss of vertical support can occur in the event of high winds or earthquake shaking.
6.	The original exterior walls constructed of railroad ties (Type A) require repairs and some bracing. The horizontal joint at the bottom of the vertical members is a hinge point for that wall and it can rotate out-of-plane at that location. Some continuous vertical strengthening is needed to run from the foundation level up to the top plate level at the roof line. Some ideas for retrofitting include what would be the equivalent to "center-coring" in the retrofit of an unreinforced masonry wall. This is accomplished by boring a hole from the top of the wall all the way down to the base, and inserting a continuous vertical rod and epoxy. Another option would be to remove interior finishes of the wall and inserting continuous vertical members in a vertical chase cut in the railroad ties from the inside. In both options, these new vertical members might be spaced 2 to 3 feet apart. Some improvements for waterproofing at the base of the walls where in contact with the foundation wall are recommended.
7.	The Type B and Type C walls should be closely inspected and repaired in kind. The siding could be reinstalled if in acceptable condition, or replaced with new siding that could also be designed to resist lateral loads. Some improvements for waterproofing at the base of the walls where in contact with the foundation wall are recommended.
8.	The minor settling of the floor could be corrected if desired while completing the recommended foundation improvements.

Conclusions

The Cornelia White House is in fair to poor structural condition and repairs and retrofitting is recommended. Most significant are the poorly constructed interior footings, the decay of the wall framing, the hinge point in the original exterior walls, and the need to brace the large stone chimney as well as the smaller adobe chimney.

Sincerely,
STRUCTURAL FOCUS

David W. Cocke, S.E.
President

Figures

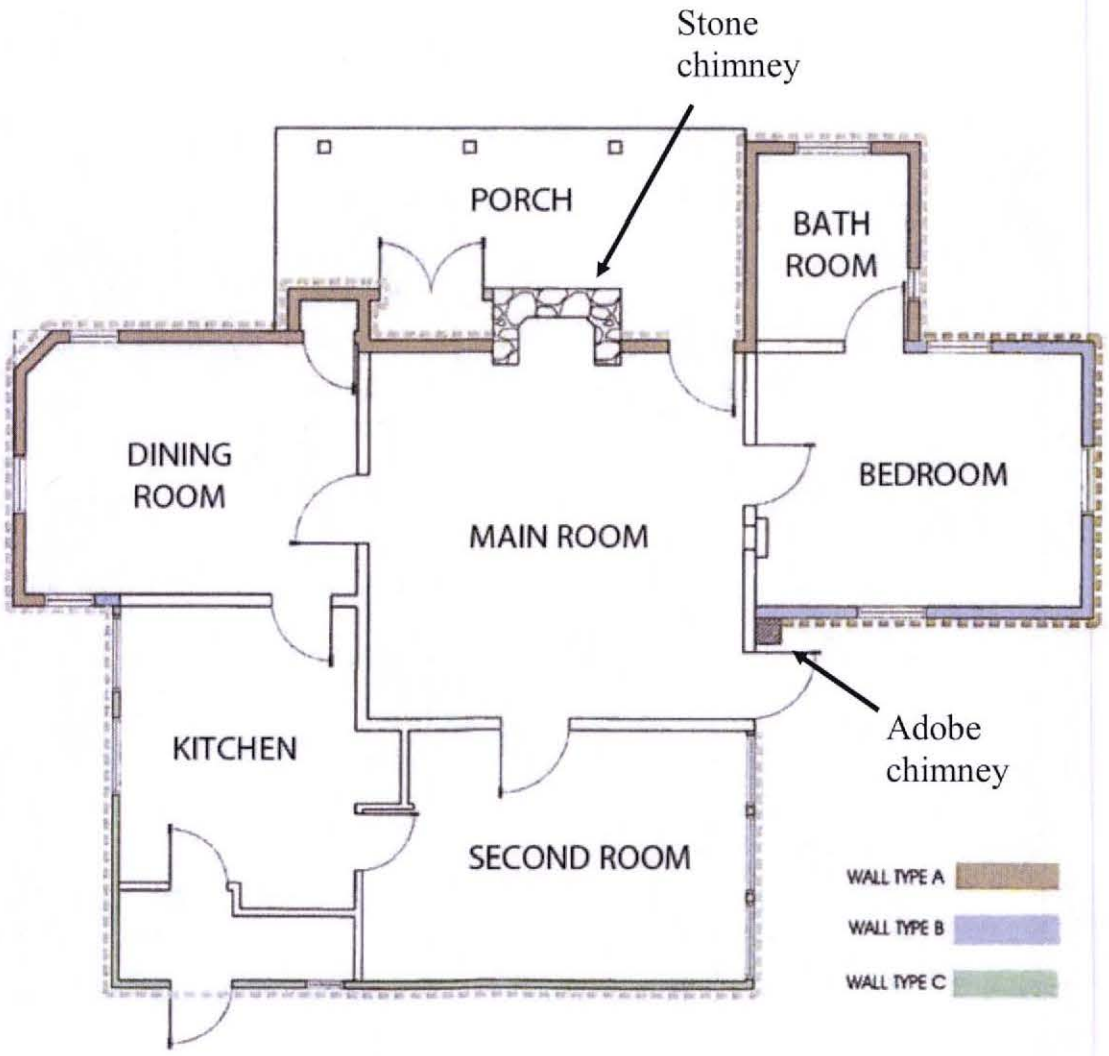


Figure 1: Floor plan (from ARG report)

Figure 2: Existing crawlspace, interior support

Figure 3: Existing crawlspace, perimeter concrete footing

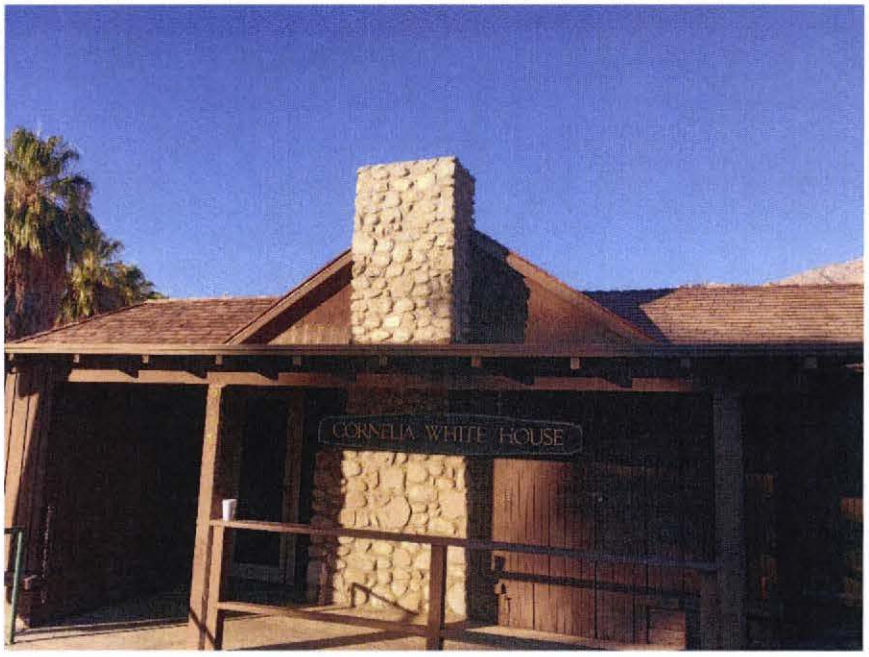


Figure 4: Existing stone chimney

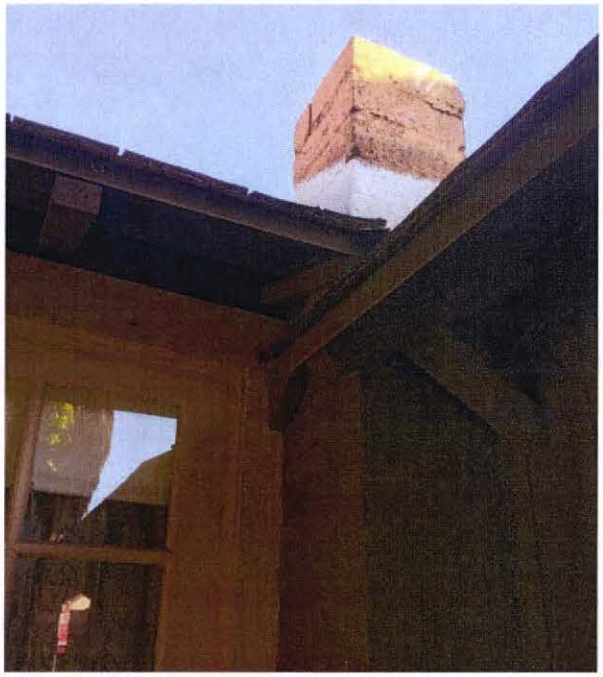


Figure 5: Existing adobe chimney

Figure 6: Existing Type A wall constructed of railroad ties

Figure 7: Existing wall with board-and-batten siding

Figure 8: *Universal Foundation Plate* manufactured by Simpson Strong-Tie, recommended for anchoring base of exterior walls to existing concrete footing

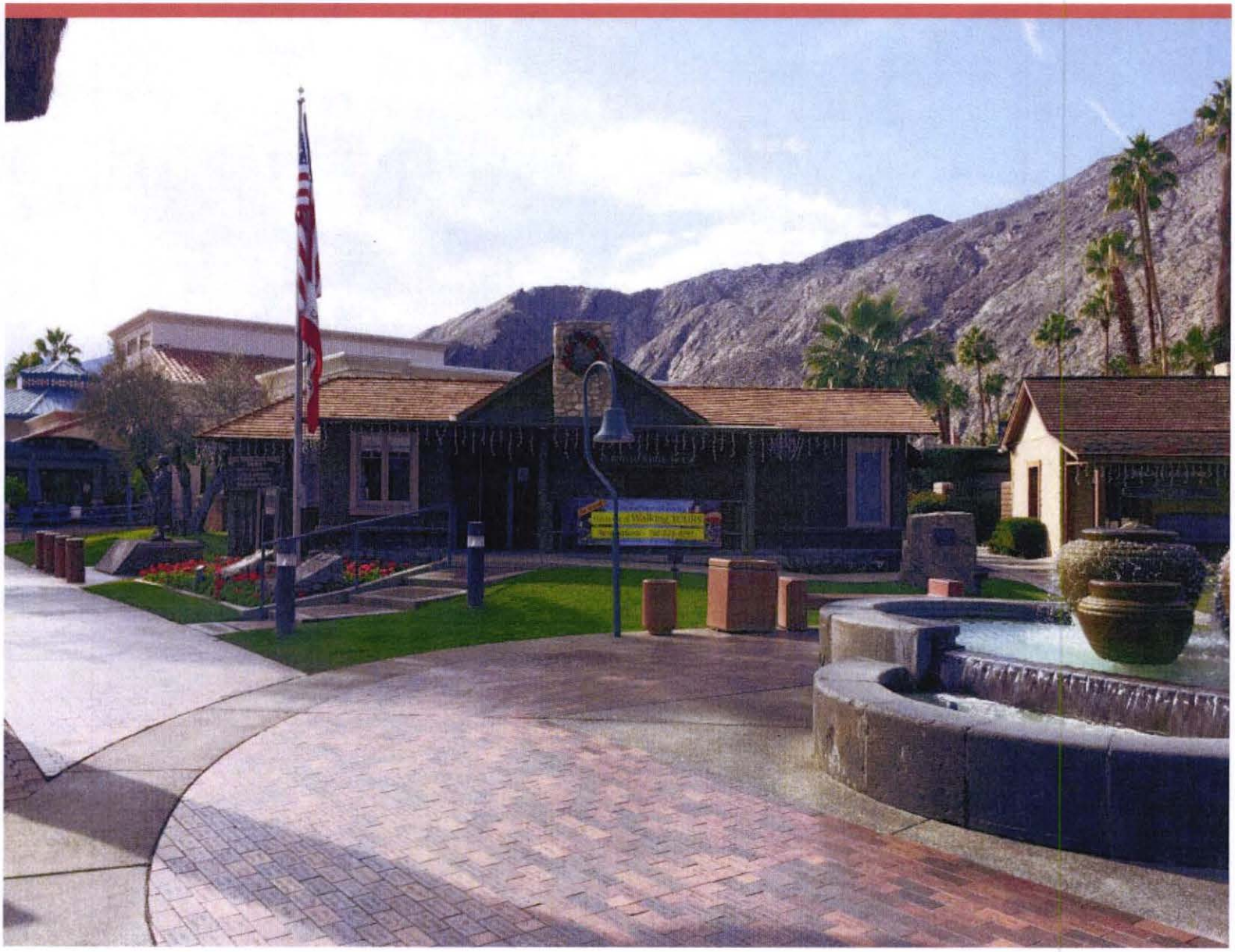
ATTACHMENT 4

REQUEST FOR PROPOSAL

Cornelia White House Stabilization

City of Palm Springs | September 19, 2016

Architecture
Planning
Conservation



Architectural
Resources Group

Architectural
Resources Group

8 Mills Place, Suite 300
Pasadena, California 91105 arg-la.com

September 19, 2016

Gianfranco Laurie, PE, TE
Senior Civil Engineer
City of Palm Springs
3200 East Tahquitz Canyon Way
Palm Springs, CA 92262

Subject: Cornelia White House Stabilization

Dear Mr. Laurie:

Architectural Resources Group, Inc., (ARG) is delighted to have the opportunity to provide the City of Palm Springs with this proposal for professional architect-of-record services and historic preservation consulting for the Cornelia White House, located at 221 South Palm Canyon Drive in Palm Springs, California. We have carefully structured this proposal based on our previous exterior investigation in March 2016, and the structural investigation performed by Structural Focus in July 2016. It includes a well-developed scope of work, timeline and deliverables for complete contract documents for an exterior stabilization and repair project.

ARG has a 36-year history of working on vital cultural resources and the rehabilitation and conservation of historic structures. We bring a unique set of qualifications to the project, with staff possessing specialized expertise in investigation and documentation of historic structures, conditions assessments, wood conservation, and the shepherding of historic structures through the regulatory approval process. As an architecture, planning and conservation firm, the collaborative nature of our practice allows us to address the complex issues surrounding historic properties in a closely-coordinated way from planning through construction.

For this project, we will draw upon our in-house staff with the most appropriate experience and skills. Christopher Smith, Principal, will continue to serve as Principal-in-Charge. Christopher believes in a collaborative and proactive management style and is currently Principal-in-Charge on the rehabilitation of Los Angeles Union Station, and the Barn at Wilderness Park in Glendale, among other exciting projects. Sarah Devan, RA, AIC, will serve as the Project Manager and will be the primary point of contact. Sarah is an architect and conservator with experience on numerous restorations and rehabilitations of existing wood buildings. Sarah will continue her previous investigation work at the Cornelia White House, performing additional field surveys and materials testing, preparing the construction documents and specifications for competitive bidding, and monitoring the work through construction. David Cocke, SE, F.SEI, F.ASCE, President of Structural Focus, will continue his work on the project and serve as the Structural Engineer-of-Record. ARG will collaborate closely with him throughout the project.

Scope of Work

Our scope of work for Tasks 1-5 are summarized in the enclosed task and fee summary sheets, and includes the following:

1. Building Investigation and Analysis
   - Additional field investigation and survey
   - Sample collection for material testing
   - Historic exterior finishes analysis
   - Testing of sample repair methods

Architectural
Resources Group

8 Mills Place, Suite 300
Pasadena, California 91105

arg-la.com

2. Building Repair Design and Construction Documents
   - Base plans and elevations based on field measurements
   - Construction documents and specifications
   - Project meetings and presentation to the Historic Sites Preservation Board
   - 50% design development and 100% construction document submissions for review by the City of Palm Springs and HSPB
   - Submission of construction documents for regulatory review
3. Bid Phase Services
   - Assistance with the bidding process, including participation in a pre-bid walkthrough, answering bidders questions through addenda, etc.
4. Construction Phase Services
   - Bi-weekly site visits to review work in progress; issue site visit reports and adjust repair quantities as required
   - Project team meetings as needed
   - Submittal review, RFI response, meeting minutes, final inspections, and review of requests for payment or change orders
5. Project Documentation
   - Final Report preparation for the project record

Fees for Basic Services

We propose all work outlined above and herein for a fixed fee cost of $70,000, including all labor, materials and travel costs. Also included are consultant fees for the structural engineer, cost estimator, and wood analysis testing. All work will be performed in keeping with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*, and the American Institute for the Conservation of Historic and Artistic Work's (AIC's) *Guidelines for Practice* and *Code of Ethics*.

We can begin work immediately after obtaining the notice to proceed. We estimate that the additional investigation, material testing and construction document preparation will take approximately three months, and that the construction phase will last approximately four months.

We hope the following proposal materials are helpful as you consider the ARG team for this work, and look forward to future discussions about this important project in the City of Palm Springs.

Sincerely,

Christopher J. Smith
Principal and Office Director
Architectural Resources Group

Rancho Los Alamitos

FIRM INTRODUCTION

Architectural Resources Group (ARG) helps people realize opportunities in the historic built environment. We navigate the range of needs and issues for clients and their historic properties to create great places, enhance investment, and enliven communities.

Integrated Approach to Design

ARG was founded in 1980 with the belief that historic buildings play an important role in communities, creating places that have value and meaning. As a full-service architectural firm, we believe that older buildings can coexist with contemporary uses in positive ways for both the user and community at large; our goal is to enhance architecture through preservation.

The firm's staff includes architects, designers, planners, historians, and materials conservators who work closely together.

- 21 Registered Architects
- 10 Architectural Historians
- 6 Architectural Conservators
- 7 Designers
- 13 LEED Accredited Professionals
- 2 AICP Planners

Our portfolio includes award-winning innovative solutions for the adaptive reuse, seismic strengthening, stabilization, materials conservation, documentation, and restoration of historic properties, as well as the design of new structures in sensitive environments.

Firm Introduction & Experience

Commitment to Sustainable Design

We are recognized leaders in sustainable preservation. We incorporate sustainable design into every project, always finding the appropriate balance between preservation and sustainability goals. Our built portfolio encompasses LEED projects at all levels of certification including the LEED Platinum rehabilitation of the Linde+Robinson Lab for Global Environmental Science at the California Institute of Technology. The majority of our projects achieve LEED Gold rating, such as Cavallo Point, the Lodge at the Golden Gate.

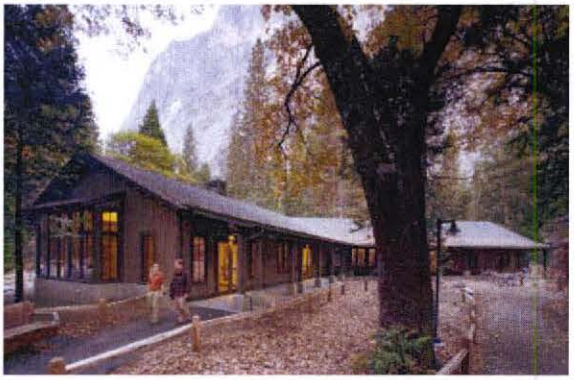
Planning and History

A core element of ARG's practice is preservation planning. The group has varied interests and areas of specialization in the fields of history, architectural history, historic preservation, cultural resources management, city planning, environmental review, and urban design. The breadth of professional experience within the group provides a solid foundation for private and public planning, research, and design projects with a historic preservation component.

Materials Conservation

Architectural Resources Group has over 30 years experience in the conservation and restoration of significant historic resources in the western United States. The firm is supported by a staff of architectural and fine arts conservators dedicated to developing appropriate conservation treatments. ARG maintains a complete conservation laboratory in which conservation and restoration treatments can be developed and tested. Our reputation in the field of conservation is based, in part, on our technical expertise in the treatment of existing historic fabric and our willingness to embrace an interdisciplinary approach to the preservation of cultural resources. Our conservators are also trained in the execution of conservation treatments in architectural settings and the constraints of on-site work. For this reason, the treatments we develop are both practical and appropriate. All treatments developed by ARG conform to the Code of Ethics of the American Institute for Conservation of Historic and Artistic Works.

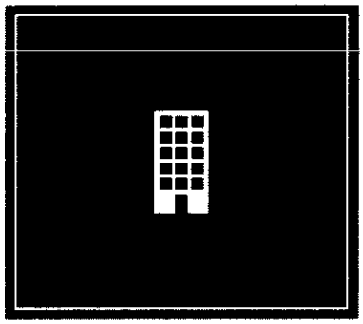
Locke Boarding House

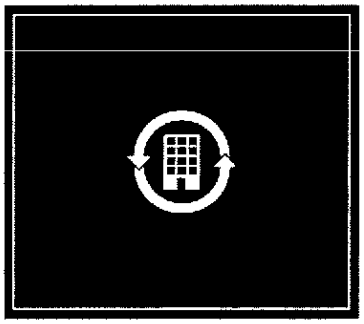


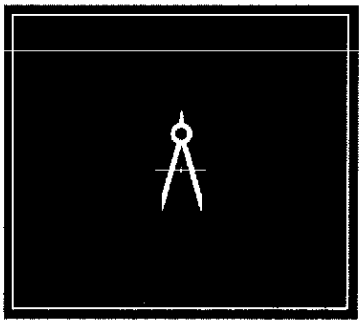
Curry Village, Yosemite National Park

Awards and Recognition

Architectural Resources Group has received over 150 awards for excellence in planning, historic preservation, and architecture from national and regional organizations including the American Institute of Architects, California Preservation Foundation, and the National Trust for Historic Preservation. In 2006, the AIA California Council named ARG Firm of the Year, the highest honor AIACC can bestow on an architecture firm. The award recognizes firms who have consistently produced distinguished architecture for a period of at least 10 years and have produced work that transcends a singular area of expertise.







SERVICES & DISCIPLINES

Architecture

- Preservation
- Restoration
- Rehabilitation
- Adaptive Reuse
- New Design
- Sustainable Design
- Universal Access Design
- Programming
- Building Assessments
- Feasibility Analysis
- Construction Administration

Planning

- Historical Research
- Historic Resources Surveys
- Historic Structure Reports
- Local, State, and National Register Nominations
- Design Guidelines
- HABS Documentation
- Environmental Compliance Documentation
- Historic Preservation Ordinances
- Historic Preservation Plans
- Master Planning
- Tax Credit Certifications
- Mills Act Property Tax Abatement Program Applications and Administration

Conservation

- Materials Conservation
- Conditions Surveys
- Repair & Maintenance Plans
- Conservation Construction Management
- Maintenance & Remedial Work

WOOD FRAME STRUCTURES

- Angel Island Immigration Station, Master Plan and Rehabilitation, San Francisco Bay, CA
- Bok Kai Temple, Stabilization of the 1880 Timber-framed Building including Significant Murals, Marysville, CA
- Cavallo Point - The Lodge at Golden Gate, Adaptive Reuse, Marin County, CA
- Cascade Ranch Horse Barn, Ano Nuevo State Park, San Mateo County, CA
- The Cave Store, Study, La Jolla, CA
- Church of One Tree, Rehabilitation/Relocation, Santa Rosa, CA
- Christ Church, Restoration, Burlingame, CA
- Conservatory of Flowers, Rehabilitation and Conservation, Golden Gate Park, San Francisco, CA
- Cowell Ranch Hay Barn, Rehabilitation, UC Santa Cruz
- Curry Village New Employee Housing, Yosemite National Park, CA
- Curry Village, Lounge and Registration Buildings, Rehabilitation, Yosemite National Park, CA
- David Glass House, Rehabilitation, San Ramon, CA
- Doc's Lab, Repair and Restoration, Monterey, CA
- Falkirk Community Center, Master Plan and Rehabilitation, San Rafael, CA
- First Church of Christ, Scientist, Berkeley, Seismic Strengthening, Berkeley, CA
- Fort Ord, East Garrison, Historic Resource Assessment and Preservation Plan, Monterey, CA
- Hercules Village Historic District, Site Planning, Hercules, CA
- Heilbron Mansion, Historic Structure Report, Sacramento, CA
- Hotel del Coronado, Restoration & Seismic Upgrade, Coronado, CA
- Johnston House, Restoration, Half Moon Bay, CA
- John Muir House, Historic Structure Report, Martinez, CA

Conservatory of Flowers

- Locke Boarding House, Rehabilitation, Locke, CA
- Luther Burbank Greenhouse, Restoration, Santa Rosa, CA
- Noyes Mansion, Adaptive Reuse & Rehabilitation, Napa, CA
- Owen Residence, Additions & Renovations, Belvedere, CA
- Preservation Park Historic District, Rehabilitation and ADA Improvements, Oakland, CA
- Rancho Los Alamitos, Master Plan and Rehabilitation and New Design, Long Beach, CA
- Ranger Operations Building, Rehabilitation, Grand Canyon National Park, AZ
- St. Peter's Catholic Church, Repair & Restoration, San Francisco, CA
- Sausalito Woman's Club, Rehabilitation and ADA improvements, Sausalito, CA
- Seavey Winery, Design of New Residence adjacent to Historic Winery, Napa Valley, CA
- Swedenborgian Church, National Historic Landmark Nomination, San Francisco, CA

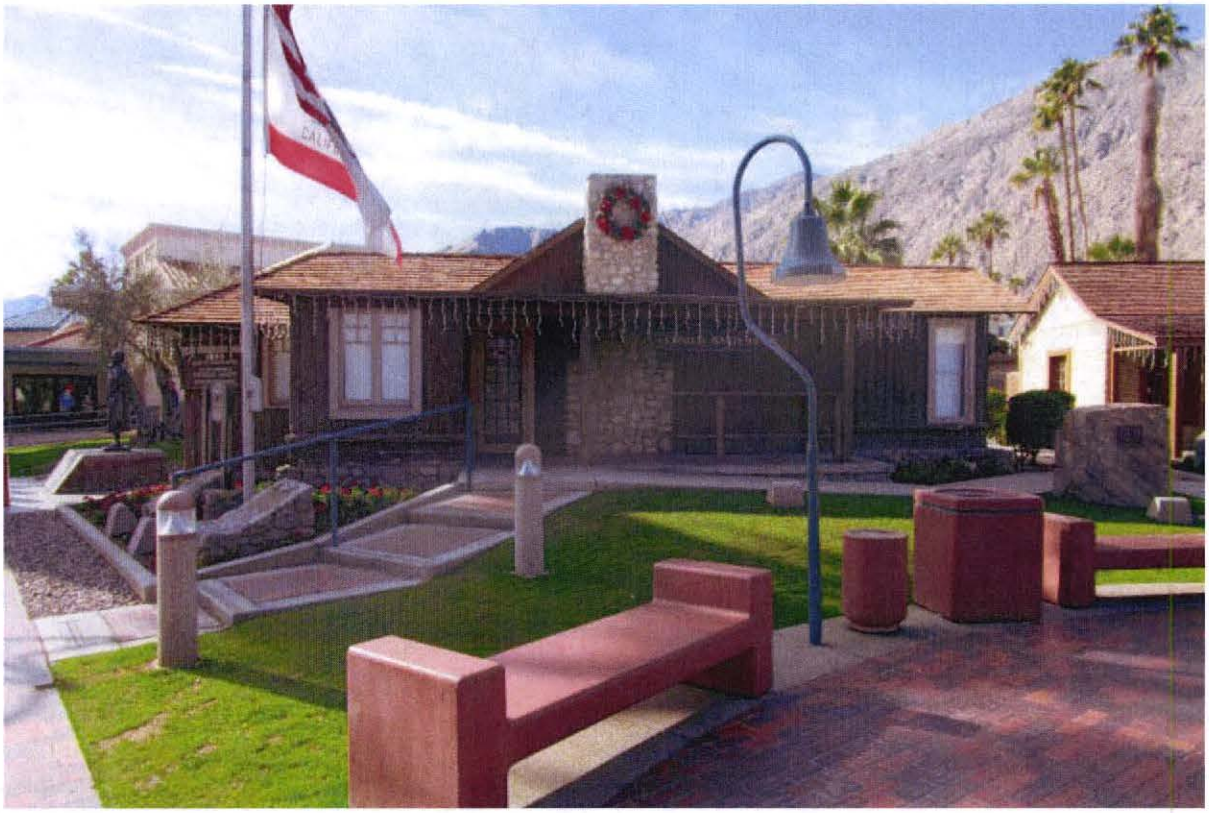
HOUSE MUSEUMS

- Bidwell Mansion, Chico, CA: Interior Paint Analysis
- Casa Serrano, Museum of Monterey, Monterey, CA: Conservation Assessment
- David Glass House, Forest Home Farms, San Ramon, CA: Master Plan, National Register Nomination, Rehabilitation, Relocation
- Falkirk Center, San Rafael, CA: Historic House Museum, Adaptive Reuse and Renovation of 1890s Residence
- Filoli National Trust Estate, Woodside, CA: Seismic Strengthening of Historic House; New Visitor and Education Building
- Francis Ermatinger House, Oregon City, OR: Rehabilitation
- Gilmore Adobe, Los Angeles, CA: Seismic Strengthening of Historic Adobe House
- Governor's Mansion, Olympia, WA: Historic Structure Report, Window Survey
- The Huntington Art Gallery, San Marino, CA: Rehabilitation and Seismic Strengthening
- Luther Burbank Greenhouse, Santa Rosa, CA: Conservation and Restoration
- Maryhill Museum of Art, Goldendate, WA: Exterior Assessment
- Meek Mansion, Historic House Museum, Hayward, CA: Historic Structures Report, Conservation, Seismic Strengthening
- Olivas Adobe, Ventura, CA: Seismic Retrofit of this California State Historic Landmark
- Peralta Adobe - Fallon House Historic Site, San Jose, CA: Ceiling Conservation Rancho Los Alamitos, Historic Ranch House Museum, Long Beach, CA: Master Planning, HSR, Rehabilitation, and New Visitor Center
- Reeder Ranch Historic Citrus Ranch, Montclair, CA: Historic Structure Report

Gilmore Adobe

Francis Ermatinger House

Project Approach



We are proposing to provide these services under the standard project delivery method (design-bid-build), with construction documents to be structured and issued for competitive bidding purposes. We propose the following schedule for the exterior stabilization and repair project:

Weeks 1-4

FURTHER INVESTIGATION

ARG will continue field investigations and perform additional materials testing as needed to inform the repair design and provide a complete project. This will include additional exploratory openings to determine underlying conditions; collecting samples and performing analysis for wood identification and historic paint finishes; field testing of specified repair products; and a more in-depth survey of several components, such as windows and doors.

Weeks 5-13

REPAIR DESIGN AND CONSTRUCTION DOCUMENTS

ARG and Structural Focus will collaborate to develop the recommended repairs, with the goal of retaining as much historic fabric as possible. Wood stabilization repairs and structural strengthening measures will be carefully considered to be sensitive to the historic fabric and outward appearance. Any disturbance of interior finishes will be kept to a minimum.

We will prepare construction documents and specifications, and allow for two reviews from the City of Palm Springs and Historic Sites Preservation Board. The documents will be revised based on any comments received, and submitted to the Building & Safety Department for plan check. Permits will be pulled by the General Contractor or as otherwise authorized by the City. We will also provide updated cost estimates at the 50% and 100% construction document stages for budgeting purposes.

Weeks 14-16

BID PHASE SERVICES

The project team will participate in a pre-bid walkthrough, respond to contractor's questions and issue any addenda required. Also, since this is specialized work, we will assist the City in reviewing contractor qualifications and selecting the best qualified firm(s) for the project.

Weeks 17-34

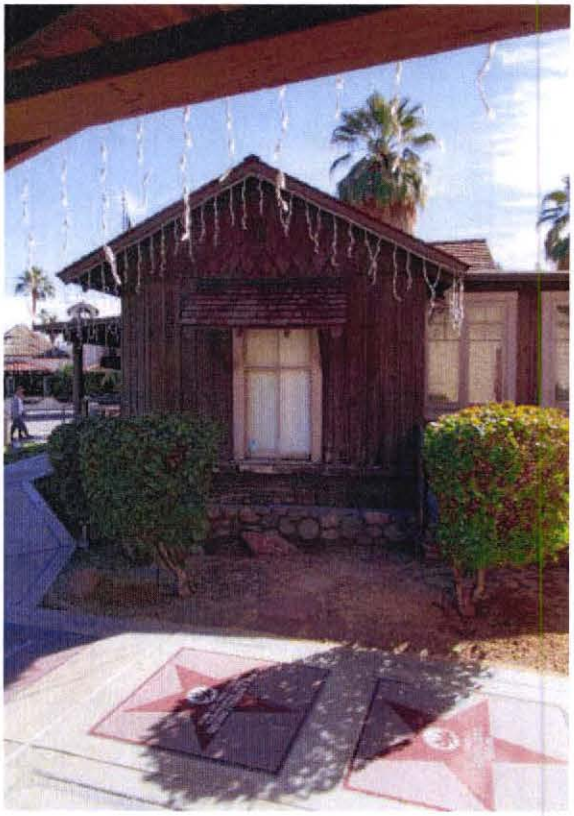
CONSTRUCTION PHASE SERVICES

The project team will conduct bi-weekly site visits during construction to monitor the work, and prepare field reports based on each site visit. We will review submittals and shop drawings, respond to contractor RFIs, and review field mockups to ensure the work is in accordance with contract documents. We will also review contractor's applications for payment and change order requests, if any, and strive to keep the project schedule on track and within budget. At the close of the project, we will prepare a Final Report which encompasses all work to date for the project record.

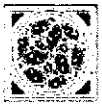
STRUCTURAL SERVICES

Structural Focus, the project structural engineer, will help develop a scope for any additional exploratory testing; develop the structural criteria and design parameters for the project; and perform an ASCE 41 Tier 1 and possibly Tier 2 evaluation of the conceptual design scheme. They will then prepare construction documents, including complete structural calculations, and assist in plan-check reviews.

During construction, they will attend project meetings and make site visits as required to review the work in progress. They will prepare field reports, respond to contractor RFIs, review submittals and mockups, and, if required, provide further clarification and interpretation including sketches.



Fee



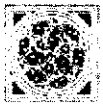
Architectural Resources Group

Cornelia White House Stabilization Project
221 South Palm Canyon Drive, Palm Springs, CA
Architectural & Preservation Consulting Services
Client: City of Palm Springs

September 19, 2016
ARG Proj. # 15002

Phase/ General Description of Work		PIC / PM Smith $180	PA / Cons Dirwin $138	ARG total hrs per task	COST per task	Timeline
Task #	**Task Description**					
1.0	**Building Investigation and Analysis**					
1.1	Perform field investigation including windows, doors, and additional in-situ; determine scope of repairs and conduct selective demolition for investigation purposes		12	12	$1,620	Wks 1-2
1.2	Collect samples for wood identification/ analysis (by independent lab)		1	1	$135	Wks 1-2
1.3	Perform sample epoxy repairs on collected samples to confirm repair products and methods		6	6	$810	Wks 3-4
1.4	Historic finishes analysis for exterior woodwork treatment		8	8	$1,080	Wks 3-4
1.5	Field testing and selection of paint strippers		6	6	$810	Wks 3-4
	Subtotal Task 1	0	33	33	$4,455	
2.0	**Building Repair Design and Construction Documents**					
2.1	Develop base plans and elevations in Autocad and coordinate with engineer	0	8	8	$1,080	Wk 4
2.2	*Prepare construction documents including drawings and specifications**	*0*	*28*	*28*	*$3,780*	Wks 5-7
2.3	Coordinate construction documents with structural engineer	0	4	4	$540	Wks 5-7
2.4	Submit progress 50% Construction Documents and cost estimate for review by City and HSPB (Allow 2 wks for review)	0	8	8	$1,080	Wk 8
2.5	Presention to HSPB for review and comments. Includes time for PowerPoint preparation and other presentation materials	4	16	20	$2,920	Wk 10
2.6	Complete 100% Construction Documents and submit to City and HSPB for final review. (Allow 2 wks for review)	2	8	10	$1,460	Wks 11 12
2.7	Submit final construction documents for purposes of securing building permit, including all regulatory clearances	2	8	10	$1,460	Wk 13
	Subtotal Task 2	8	80	88	$12,320	
3.0	**Bid Phase Services**					
3.1	*Participate in pre-bid walk on site with City and bidders**	*0*	*0*	*0*	*$0*	Wks 14-16
3.5	*Review and provide responses to RFI'S and questions from bidders**	*0*	*0*	*0*	*$0*	Wks 14-16
	Subtotal Task 3	***0***	***0***	***0***	***$0***	
4.0	**Construction Phase Services**					
4.1	Perform bi-Wkly site visits; review selective removals, mockups, and repair processes	4	24	28	$4,000	Wks 17-31
4.2	Attend project team meetings. Issue meeting minutes	4	8	12	$1,840	Wks 17-31
4.3	Provide additional field survey as req'd and adjust repair quantities accordingly	0	16	16	$2,160	Wks 17-31
4.4	Issue site visit reports	0	16	16	$2,160	Wks 17-31
4.5	*Review submittals and respond to Contractor RFI's**	*0*	*0*	*0*	*$0*	Wks 17-31
4.6	Review requests for payment, change order requests, etc.	0	8	8	$1,080	Wks 17-31
4.7	Perform punch list walk (allow 1), final inspection (allow 1), and project closeout	0	8	8	$1,080	Wks 32-33
	Subtotal Task 4	8	80	88	$12,320	

Fee



Architectural Resources Group

Phase/ General Description of Work	PIC / PM: Smith $190	PA / Cons: Devan $135	ARG total hrs per task	COST per task	Timeline
5.0 Project Documentation					
5.1 *Prepare Final Report for project record**	*0*	*0*	*0*	*$0*	Wk 34
Subtotal Task 5	***0***	***0***	***0***	***$0***	

SUBTOTAL PROJECT ARCHITECTURAL FEES (Tasks 1-5)	$29,095
Estimated Reimbursable Budget (10%)	$2,905
Consultants	
Structural Focus: Structural Engineering Fees	$33,000
Jackie Chan - Cost Estimating	$3,500
Forest Products - Wood ID/Analysis	$1,500
Total Consultant Fees	$38,000
TOTAL PROJECT FEES	$70,000

Notes

Billing will occur monthly based on percentage of work completed

**Task, or portion of task, included in previous Scope of Services agreement*

Exclusions

1. A complete set of as-built drawings are not included in this fee
2. Mechanical, plumbing, electrical, geotechnical/soils testing and hazardous material testing are not included in this fee. ARG may offer recommendations for qualified firms if desired.
3. Task 3 assumes standard 2-4 Week period and one round of bidding
4. Task 4 Estimated four month construction period. Assumes standard project delivery method with Owner - Contractor agreement and ARG as architect of record

Project Team

CHRISTOPHER J. SMITH

Principal | Office Director | Preservation Specialist

Christopher J. Smith is a preservation specialist in ARG's Pasadena office with 20 years of experience in design project management and construction administration. His work includes the seismic upgrade and rehabilitation of Pasadena City Hall and the Harry Cohn Estate in Beverly Hills, California. He is currently serving as the principal-in-charge/project manager/preservation specialist/project designer for ARG's work at Los Angeles Union Station. He was a member of the Pasadena Heritage board of directors from 2008 to 2011 and is currently serving on the Pasadena Heritage Advisory Council. He received a graduate certificate in historic preservation from the University of Southern California and a bachelor of arts in urban studies from California State University, Northridge.

Relevant Project Experience

- Cornelia White House, Exterior Facade Investigation and Documentation, Palm Springs, CA
- Reeder Ranch, Historic Structures Report, Montclair, CA
- Gilmore Adobe Rehabilitation, Los Angeles, CA
- The Barn at Wilderness Park, Seismic Stabilization and Rehabilitation, Glendale, CA
- Hotel Green Apartments, New Apartment Expansion to Historic Building, Pasadena, CA
- Pasadena City Hall Seismic Upgrade and Rehabilitation, Pasadena, CA
- Pasadena YWCA, Rehabilitation and Hotel Adaptive Reuse, Pasadena, CA
- Pasadena Playhouse, Historic Structures Report and Master Plan, Pasadena, CA
- Wayfarers Chapel, Historic Structures Report, Rancho Palos Verdes, CA
- First Church Christ Scientist, Voluntary Seismic Upgrade, Pasadena, CA
- California Institute of Technology, Linde + Robinson Lab for Global Environmental Science, Pasadena, CA
- Harry Cohn Estate, 1000 N. Crescent Drive, Landmark Nomination and Architectural Services Beverly Hills, CA
- Los Angeles Union Station, Feasibility Study-Design Guidelines-Tenant Improvements, Retail Store and Kiosk Design, On-Call Architect, Los Angeles, CA
- Ole Hanson Beach Club & Pool Rehabilitation, San Clemente, CA
- Algemac's Coffee Shop at Glendale City Lights, Building Rehabilitation, Glendale, CA
- Jensen's Recreation Center, Building Rehabilitation and Restoration, Los Angeles, CA
- The Duck Farm Feasibility Study, Watershed Conservation Authority, La Puente, CA

Education

Graduate Certificate in Historic Preservation, University of Southern California

Bachelor of Arts, Urban Studies: Architecture Emphasis, California State University, Northridge

Meets *The Secretary of the Interior's Professional Qualifications Standards* in Architecture and Historic Architecture

Memberships

Member, City of LA Historic Commercial Reuse Guidelines Task Force

Pasadena Heritage, Advisory Council (current)

Pasadena Heritage, Board of Directors (2008-2011)

National Trust for Historic Preservation

Los Angeles Conservancy

Urban Land Institute

Project Team

SARAH A. DEVAN
Architect | Conservator

Sarah is an architect and conservator with over thirteen years of combined experience in the conservation and restoration of architecture, sculpture, art objects, and documents and works of art on paper. She has particular experience with terra cotta, stone and brick masonry. She has conducted numerous surveys and conditions assessments, and has provided technical reports, historic structure reports, conditions assessments and surveys for both individual treatments and long-term planning initiatives.

Sarah is a Professional Associate with the American Institute for Conservation of Historic and Artistic Works (AIC), and adheres to both the AIC Code of Ethics and Guidelines for Practice and the Secretary of the Interior's Standards for the Treatment of Historic Properties. Prior to joining ARG, Ms. Devan worked as an associate conservator with Griswold Conservation Associates, LLC (GCA) and Rosa Lowinger & Associates (RLA) in the Los Angeles area; as an associate architect with Wiss, Janney & Elstner Associates, Inc. (WJE) in New York City and Austin, Texas; and as an associate architect with Jameson Architects, PA (JAPA) in Little Rock, Arkansas.

Relevant Project Experience

- Cornelia White House, Exterior Investigation and Documentation, Palm Springs, CA
- Joel McCrea Ranch House & Site, Building Rehabilitation Report, Agoura Hills, CA
- Pittock Mansion Seismic, Infrastructure, & Facade Assessment, Portland, OR
- Ryan Mining Camp, Buildings and Site Assessment Report, Death Valley, CA
- Silver Falls Y Camp Dining Hall, Wood Building Assessment, Silver Falls, OR
- Washington State Capitol, On-Call Conservator, Olympia, WA
- UCLA Clark Library, Construction Monitoring, Los Angeles, CA
- Wayfarers Chapel, Historic Structures Report, Ranch Palos Verdes, CA
- Stanford Memorial Church, Stained Glass Window Treatments, San Francisco, CA
- Portland City Hall, Sandstone Facade Assessment, Portland, OR
- Conservation of the Mausoleum and the Library Fountain for the Huntington Library, Art Collections and Botanical Gardens, San Marino, CA*
- New York Public Library, Exterior Restoration, New York, NY*
- Jacob Wolf House (log structure), Restoration, Norfork, AR*

** indicates work performed prior to joining ARG*

Education

Master of Science in Historic Preservation, Columbia University, New York

Bachelor of Architecture, University of Arkansas, Fayetteville

Memberships

Licensed Architect, New York

Professional Associate, American Institute for Conservation of Historic and Artistic Works (AIC)

Certificate, National Council of Architectural Registration Boards (NCARB)

Board Member, Association for Preservation Technology, Western Chapter (WC/APT)

Project Team

David Cocke, S.E.
President

David Cocke, S.E. founded Structural Focus in 2001

after 20 years at a previous firm. He is a registered structural engineer in California, Arizona, Nevada and several other states, with expertise in new structural design, seismic evaluation, historic preservation, and retrofit design. David has managed a variety of project types and sizes including new laboratory buildings, large and small historic landmark building strengthening and repairs, repair and retrofit of commercial buildings, large university building renovations, renovations and design of new studio production facilities, evaluations of large building inventories (industrial, high-tech and film studios), and numerous university and school renovations, additions and strengthening. He is very active in the preservation of historic buildings and has made numerous presentations regarding the reuse of existing buildings as supporting sustainability principles. David is also experienced in the preparation of post-disaster plans for building owners.

Notable historic projects: The Hotel del Coronado renovations, San Francisco Ferry Building earthquake repairs, UC Berkeley's Valley Life Sciences Building, University of Redlands Memorial Chapel renovations, several historic buildings at Stanford University, Fresno's Santa Fe Railroad Depot, and dozens more.

Education

- B.S. – Virginia Tech, 1980
- M.S. – San Jose State University, 1987

Licensing

- Civil & Structural Engineer, California, S3005 and Nevada, Arizona, Colorado, Florida, Maryland, Georgia & Illinois

Professional Affiliations

- Fellow of the Structural Engineers Institute of the American Society of Civil Engineers
- Honorary Member of Structural Engineers Association of Southern California
- California Historical Building Safety Board, Alternate Member 2007-present
- Earthquake Engineering Research Institute, Southern California Chapter Charter Member, Endowment Fund Board, 2012 to present
- Pasadena Heritage Board of Directors 2008 – Present, Treasurer 2009 - 2012
- USC Architectural Guild, Board of Directors 2002 – 2007; President 2006-07, Vice-President 2005-06
- California Preservation Foundation, Board of Trustees 1996 to 2003, Treasurer 1998-2002
- American Society of Civil Engineers, Structural Engineering Institute, 2007 Structures Congress Steering Committee, Vice-Chair Public Relations Committee 2005-07, Chair 2008-2011
- Structural Engineers Association of Northern California, Board of Directors 1991-1993; Chair - Young Members Forum, 1984; Chair - Continuing Education Committee, 1987; Chair - Public Affairs and Membership Committee, 1991
- Structural Engineers Association of California, Board of Directors 2002-2004 and 1993-1995; Public Relations Committee 2003 – 2007; Chair SEAOC Excellence in Structural Engineering Awards sub-committee 2004-2007
- Los Angeles Conservancy, Member
- National Trust for Historic Preservation, Member
- American Institute of Architects, Los Angeles Chapter; Affiliate

ATTACHMENT 5

AMENDMENT NO. 2 TO PROFESSIONAL SERVICES AGREEMENT NO. 6791
WITH ARCHITECTURAL RESOURCES GROUP, INC.
CORNELIA WHITE HOUSE EXTERIOR REPAIRS,
CITY PROJECT NO. 15-16

The following articles of Agreement No. 6791 are hereby amended to read as follows:

SECTION 2.1 Maximum contract amount is increased by $70,000 and the total amount of compensation is amended to $116,253.06.

SECTION 3.4 Unless earlier terminated in accordance with Section 3.5 of Agreement No. 6791, this Agreement shall continue in full force and effect for a period of twenty-four (24) months, ending on December 31, 2017. The time for completion of the services to be performed by Consultant is an essential condition of this Agreement. Consultant shall prosecute regularly and diligently the work of this Agreement according to the agreed upon schedule of performances set forth in Exhibit "A" (attached). Consultant shall not be accountable for delays in the progress of its work caused by any condition beyond its control and without the fault or negligence of Consultant. Delays shall not entitle Consultant to any additional compensation regardless of the party responsible for the delay.

SCOPE OF SERVICES (Exhibit "A") - Exhibit "A" is amended as follows:

Add the following additional scope of work for the Cornelia White House:

1.0 Building Investigation and Analysis

1.1 Perform field investigation: Including windows, doors, and additional in-situ; determine scope of repairs and conduct selective demolition for investigation purposes

1.2 Collect samples for wood identification/analysis (by independent lab)

1.3 Perform sample epoxy repairs on collected samples to confirm repair products and methods

1.4 Historic finishes analysis for exterior woodwork treatment

1.5 Field testing and selection of paint strippers

2.0 Building Repair Design and Construction Documents

2.1 Develop base plans and elevations in Autocad and coordinate with engineer

2.2 *Prepare construction documents including drawings and specifications**

2.3 Coordinate construction documents with structural engineer

2.4 Submit progress 50% Construction Documents and cost estimate for review by City and HSPB

2.5 Presentation to HSPB for review and comment. Includes time for Power Point preparation and other presentation materials

2.6 Complete 100% Construction Documents and submit to City and HSPB for final review

2.7 Submit final construction documents for purposes of securing building permit, including all

regulatory clearances

3.0 Bid Phase Services

*3.1 Participate in pre-bid walk on site with City and bidders**

*3.5 Review and provide responses to RFI's and questions from bidders**

4.0 Construction Phase Services

4.1 Perform bi-weekly site visits; review selective removals, mockups, and repair processes

4.2 Attend project team meetings and issue meeting minutes

4.3 Provide additional field surveys as required and adjust repair quantities accordingly

4.4 Issue site visit reports

*4.5 Review submittals and respond to Contractor RFI's**

4.6 Review requests for payment, change order requests, etc.

4.7 Perform punch list walk (allow 1), final inspection (allow 1), and project closeout

5.0 Project Documentation

*5.1 Prepare Final Report for project record**

6.0 Consultants

6.1 Structural Focus – Structural Engineering (plans and calculations)

6.2 Jackie Chan – Cost Estimating

6.3 Forest Products – Wood ID/Analysis

*Note: *Task, or portion of task, included in previous Scope of Services agreement*

The Compensation identified on Exhibit "A" is hereby amended as follows:

Compensation for additional scope of work for the Cornelia White House shall be hourly based upon the standard rates of the Architect and his Consultants, not to exceed $67,095

Reimbursable for expenses shall be on an allowance, not to exceed $2,905

Total Contract amount is increased by $70,000 and amended to a total amount of $116,253.06.

PURCHASE ORDER SUMMARY

Purchase Order Number(s): 16-0714
Agreement Number: 6791
Original City Manager Approval: December 15, 2015

Original Contract Amount:	$ 41,126.00
Amendment No. 1	$ 5,127.06
Amount of This Increase	$ 70,000.00
Amended Total:	**$ 116,253.06**

Account Number: 261-1395-54114

Except as specifically amended by this Amendment No. 2, all terms and provisions of Agreement No. 6791 remain in full force and effect.

ATTEST:

By: _____
City Clerk

CITY OF PALM SPRINGS,
a California charter city

By: _____
City Manager

APPROVED AS TO FORM:

By _____
City Attorney

CONSULTANT: Architectural Resources Group, Inc.

Check one: __Individual __Partnership X__Corporation

Corporations require two notarized signatures: One signature **must** be from the Chairman of Board, President, or any Vice President. The second signature **must** be from the Secretary, Assistant Secretary, Treasurer, Assistant Treasurer, or Chief Financial Officer).

By: Notarized Signature of Chairman of Board, President or any Vice President

Name:_____

Title:_____

By: Notarized Signature Secretary, Asst. Secretary, Treasurer, Asst. Treasurer or Chief Financial Officer

Name:_____

Title:_____

ATTACHMENT 6

Exterior & Structural Stabilization

Cornelia White House

Palm Spring, California

for

Architectural Resources Group, Inc.

ph 213 800 1568, e jchan@kpjconsultingusa.com

TABLE OF CONTENTS

AT A GLANCE

This Cost Plan Report

This report has been prepared to help establish, review and manage a realistic project scope, budget and cost. This report should be reviewed, revised and updated as the project progresses closer to bidding and construction.

This is a measured approximate-quantities cost plan based on study and some assumptions have been made - it has not been prepared on a simple dollars-per-square-foot basis. The content and purpose of this cost plan should be treated accordingly and reviewed as the documents, program and design progress. Assumptions and recommendations should be carefully checked.

This report is based on a Design Bid Build contract and sub trade bidding to several sub contractors. 'Small local, hands-on' general contractors (i.e. the site carpenter may also be the supervisor and general contractor) may be more competitive than other general contractors with higher off-site costs and employed supervisors. Contractors' responses to documents, designs and programs will vary - as they must assess the market, prices and workload. This Cost Plan Report is to help you establish a 'fair' price. Actual Bid prices can be expected to vary.

Note: No allowance is included for potential costs or savings for adopting a negotiated contract, for using a Construction Management Contract, the use of non-traditional forms of procurement, the need for an accelerated program or for the potential reduced competition by bidding to one general contractor only.

Scope of Cost Plan

The scope of work is based on Exterior Investigation Report of Cornelia White House in City of Palm Springs dated March 18th, 2016 by Architectural Resources Group and Preliminary Structural Evaluation and Historic Structures Report of Cornelia White House dated July 27, 2016 by Structural Focus.

Specific Inclusions - PC Allowances, Provisional & other allowances

Please refer to the 'Detailed Trade Costs' section of this report for specific allowances.

Assumptions made in the Cost Plan

This cost plan was prepared under the following assumptions:

1. Competitive Design-Bid-Build procurement will be utilized with 4 or more general contractors.
2. No phasing will be required.
3. Work can take place during normal and off business hours
4. Prevailing Wage labor rate structure.
5. All wood repair/ replacement is a "guess-timate" at this point, and will change during construction after more of the deterioration is revealed.
6. All the retrofit work will be done from the exterior

AT A GLANCE

Phasing Plan and Schedule

1 Projected start at Spring 2017 for 6 months construction period.

Exclusions

Costs for the following items are excluded from this report. These items should be considered, checked and confirmed during

1 Professional design and consulting fees.
2 General building permit including plans and permits for fire alarm system unless noted.
3 Testing fees.
4 Owner's field inspection costs.
5 Construction / project manager's fees.
6 Plan check fees and building permit fees unless noted.
7 Furnishings, fixtures and equipment (FF&E) / Group II.
8 Owner-furnished items.
9 Building signage beyond code-required signage.
10 Artwork and interior plants.
11 Construction contingency unless noted.
12 Move-in costs or maintenance costs after move-in.
13 Financing, land and due diligence costs.
14 Hazmat/Mold Abatement.
15 Complete seismic upgrades.
16 ADA compliance.
17 Title 24 energy compliance.
18 Remove and relocate on site furniture.
19 Grading and new/modifing existing utility
20 Site clearing at existing site.
21 Underpinning.
22 MEP upgrades/repairs.
23 Modify sprinkler system, relocate sprinkler heads/ piping (by Owner).
24 Pest control survey.
25 Correct floor settlement.
26 New or repair or reinstall interior finishes.

Material & Escalation Index

Future escalation is not included We recommend 6% for rest of 2016 to through to 2017.

Contingency

Many projects change & grow - during design and documentation (and, even during construction) - having items and costs added. To help maintain the budget, the following Contingency allowances are included in this report for some of these unexpected or undefined costs (please refer to the 'Detailed Trade Costs' section for further explanations):

Design Contingency -20%
Construction Contingency -5% (By Owner)

AT A GLANCE

Talking to general contractors

Due to the early nature of the drawings, and our assumptions and inclusions, project costs will not always match general contractors "ball-park estimates". We do not normally recommend discussing costs with general contractors at this early stage... such advice is sometimes incomplete and therefore not very helpful.

However this Project involves historical preservation which is highly specialize trade. We spoke with specialty "historic" contractor - Spectra Company (909-599-0760) about the construction processes/methods and costs associated with it.

This report is prepared by...

Total Construction Cost Summary

Documents	Area	Cost / SF	% of Total Cost	Total
Exterior Architectural Repairs (March 18, 2016)	940 SF	$618	54.98%	**$580,872**
Structural Repairs (July 27, 2016)	940 SF	$506	45.02%	**$475,601**
TOTAL ESTIMATED CONSTRUCTION COST	**940 SF**	$1,124		**$1,056,473**

Add Alternate

a.	New low-profile metal gutters at eaves	85 LF	$17.55	$1,492
b.	New metal downspouts and splash blocks	8 EA	$59.86	$479

Architectural Base Scope

	Elemental Format	Quantity	Unit	Unit Cost	Total
BASE SCOPE					
	General				
1	Chemically strip and hand-remove paint coatings from all exterior wood surfaces	1,100	SF	$20.25	$22,275
2	Remove old patches and epoxies	12	EA	$195.75	$2,349
3	Hand removal of decayed areas of wood to remain	330	SF	$135.00	$44,550
4	Borate wood preservative and fungicidal treatment	1,100	SF	$8.10	$8,910
5	Borate rods at base of walls at building corners and mid-points; spacing TBD per manuf. recs.	20	EA	$594.00	$11,880
6	Clear penetrating water-repellent (paintable), spray	1,100	SF	$4.43	$4,871
7	Prime and paint, 2 coats	1,500	SF	$3.78	$5,670
	Cross Ties				
8	Wood epoxy repair, <5"	220	SF	$102.60	$22,572
9	Dutchman repair	12	SF	$148.26	$1,779
10	Face replacement	24	LF	$258.18	$6,196
11	End replacement	24	LF	$258.18	$6,196
12	Infill replacement	24	LF	$258.18	$6,196
13	Full member replacement	24	LF	$314.31	$7,543
	Board Siding				
14	Wood epoxy repair, <2"	50	SF	$114.75	$5,738
15	Dutchmen/ partial replacement	100	LF	$128.93	$12,893
16	Full replacement	40	LF	$224.51	$8,980
	Batten Trim				
17	Dutchmen/ partial replacement	100	LF	$130.41	$13,041
18	Full replacement	100	LF	$246.96	$24,696
	Windows and Doors				
19	Window restoration (see report for scope)	23	EA	$2,026.07	$46,600
20	Door restoration (see report for scope), single	2	EA	$5,656.50	$11,313
21	Replace kitchen door; repair frame, single	1	EA	$1,890.00	$1,890
	Misc./ Other				
22	Perimeter flashing/ separation at foundation wall, 4' deep	160	LF	$47.25	$7,560
23	Replace portion of concrete slab near SW corner; incorporate wall flashing, below-grade waterproofing	12	SF	$270.00	$3,240
24	Wall flashing at HVAC ductwork	8	LF	$33.75	$270
25	Repair wood fence at mech area, 19' x 3'	57	SF	$16.20	$923
26	Misc. patch, repair, demo and protect in place	940	SF	$8.78	$8,249
27	Misc. blockings and metals	940	SF	$13.50	$12,690
28	Allow for protection of existing finishes	1	LS	$4,700.00	$4,700
	Subtotal: Direct costs	***$333.80/SF***			**$313,770**

Architectural Base Scope

Elemental Format	Quantity	Unit	Unit Cost	Total
Markups				
General Conditions	20.00	%	$313,770	$62,754
General Requirements	10.00	%	$313,770	$31,377
Bonds	2.00	%	$313,770	$6,275
Insurance	1.50	%	$313,770	$4,707
Contractor's OH&P	8.00	%	$418,882	$33,511
Design contingency	20.00	%	$452,393	$90,479
Escalation	7.00	%	$542,871	$38,001
Total	***$617.95/SF***			***$580,872***

Structural Scope

	Elemental Format	Quantity	Unit	Unit Cost	Total
ADD SCOPE					
	Structural				
31	Temporary shoring, allow	940	SF	$40.50	$38,070
32	Anchorage Simpson Strong Tie universal foundation plate allow 4'-0" o.c.	75	EA	$270.00	$20,250
33	Reinforced CMU pier, 2' L x 2' W x 2' D	25	EA	$405.00	$10,125
34	Simpson strap ties top of stone chimney to roof joists	8	EA	$1,282.50	$10,260
35	Add reinforced bars (30LB/SF) with grout to small adobe chimney	24	SF	$675.00	$16,200
36	Center core railroad ties and anchor to foundation wall with epoxy steel rod @ 24"	30	EA	$5,400.00	$162,000
	Subtotal: Direct costs	***$273.30/SF***			**$256,905**
	Markups				
	General Conditions	20.00	%	$256,905	$51,381
	General Requirements	10.00	%	$256,905	$25,691
	Bonds	2.00	%	$256,905	$5,138
	Insurance	1.50	%	$256,905	$3,854
	Contractor's OH&P	8.00	%	$342,968	$27,437
	Design contingency	20.00	%	$370,406	$74,081
	Escalation	7.00	%	$444,487	$31,114
	Total	***$505.96/SF***			***$475,601***