

Tempe Historic Preservation Office
Supplemental Report – Rehabilitation as a Treatment

LAIRD - SIMPSON HOUSE

Tempe Historic Property Register #40
Tempe Historic Preservation Commission
14A-4 HPC Public Hearing 02/10/2011

The Laird - Simpson House located at 1204 South Mill Avenue experienced a fire that structurally damaged the 1940 unreinforced clay-brick masonry house. Forensic engineering provided by the insurance underwriter indicated extensive structural damage was caused by the fire in combination with an explosive smoke event in the northeast corner of the building. Subsequent abatement of hazardous and regulated materials carried out by the insurance provider in combination with general demolition and cleanup to make the site ready for clearing or repair resulted in loss of the character defining windows. The Owners contracted to repair the fire damage and submitted plans to the city for building permit review. Tempe Building Safety identified additional conditions that would need to be addressed for code compliance and to restore structural integrity. This supplemental report recommends Preservation as the best treatment option because the condition of the property subsequent to a catastrophic loss of integrity limits criteria under which historic significance can be interpreted.



***Rehabilitation as the Preservation Treatment for an Historic Building
Subsequent to Catastrophic Loss of Structural Integrity***

BACKGROUND

In the aftermath of the fire the Owners became increasingly unsure of the cost and feasibility of repairing the house and began to consider other options for returning the property to beneficial use. They contacted the Tempe Historic Preservation Office who determined the property to be significant for its association with the 1924 Park Tract subdivision, one of Tempe's oldest intact subdivisions, with Hugh E. Laird and his wife Edna Hackett Laird, and with the family of their daughter and son-in-law Ruby and Ed Simpson including the current property Owners Elna Rae (Simpson) and Phil Zeilinger. HPO indicated that if this property were sensitively repaired it could additionally serve as an excellent example of the Ranch style house form.^{1 2}

With the HPO opinion of potential eligibility the Owners requested support from the Tempe Historic Preservation Commission for historic designation and listing in the Tempe Historic Property Register. Although in its damaged condition the property would not be eligible for designation, Tempe HPC recognized the significance of the property as well as the Owner's right to initiate the designation process concurrently with repair. To improve the probability of successful designation the Owners and Tempe HPO identified a campaign of work that would allow the property to be designated historic and listed in the Tempe Historic Property Register. These issues were memorialized as stipulations in a Memorandum of Understanding between the Owners and Tempe HPO. Next the Owners contracted for architectural services from a firm with substantial experience in the field of historic preservation in an effort to maximize the potential for ultimately listing the property in the National Register of Historic Places as well as in the Tempe Historic Property Register.^{3 4}

SIGNIFICANCE

Determining the appropriate treatment type for a property begins with identifying the basis for the property's historic significance. Like many historic properties, the 1940 Laird - Simpson House derives significance from several important associations with community history. Through "association with events that have made a significant contribution to the broad patterns of community history" this property survives as an example of residential development in the historic 1924 Park Tract subdivision. A building eligible for listing under this criterion must possess integrity of Location, Materials, Feeling, and Association. By "association with the lives of significant persons in our past" the property maintains important connections with prominent community members and sustains significant connections to some of these families today. A building eligible for listing under this criterion must possess integrity of Materials, Feeling, and Association. Finally, as an example that "embodies the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master" this property is significant for its historicity simply because it exists in the upper ninety-ninth percentile ($n = 181/53,665 = 99.56$) of all Tempe properties in terms of age. Consequently, the property is considered to be a rare surviving example of a once common type and retains the potential to provide an excellent example of an historic Ranch style house. Designed by prominent local architect Kemper Goodwin, skillful detailing and mastery of design further distinguish this as a quintessential example of an otherwise ubiquitous form. A building eligible for listing under this criterion must possess integrity of Design, Workmanship, Materials, and Feeling.^{5 6}

Although the property derives significance from a multiplicity of criteria, its fundamental and sustained association with persons important to community history may, in its present condition, be the easiest story to interpret with authenticity. In comparison, significance under Criterion C (Architecture) would require the building to retain a high level of character-defining features in original condition from the time of construction. Narrowing the basis for significance to NPS Criterion B (Persons) emphasizes interpretation of those aspects of integrity which have best survived and are therefore most capable of being further conserved and enhanced in order for the property to remain eligible for listing.

The existing material integrity of the property is important in identifying treatment types due to substantial loss of structural integrity. The Laird - Simpson House challenges us to evaluate integrity in several ways. Sensitive mitigation of damage requires evaluation and conservation of its Historic Integrity, Material Integrity, and Structural Integrity. These conditions share the concept of soundness as fundamental to the test for integrity and so our evaluation and remediation will seek to conserve and enhance soundness using guidance from several sources.

A working definition of *Historic Integrity* is provided by NPS in their advice on how to apply the National Register criteria for evaluation which states: "Integrity is the ability of a property to convey its significance." For historic eligibility therefore, integrity is what enables a property to communicate significant aspects of its past. NPS has identified seven aspects of historic integrity which must be present in different combinations depending on the criteria from which historic significance is derived. At the Laird - Simpson House existing conditions have been shown to narrow the criteria under which ongoing eligibility can be considered and suggest significance under Criterion B might remain most reasonable and feasible. Material Integrity is a condition precedent to continued eligibility under Criterion B and accordingly is of particular importance in preparing a treatment plan.⁷

A working definition of *Material Integrity* is provided by the Tax Code which states: "Tax Incentives are not available where there is insufficient historic material to preserve at the outset of the rehabilitation." The Tax Code requires a property to retain key exterior materials dating from the period of historic significance and stipulates rehabilitation must preserve historic materials and significant features to remain eligible for tax benefits.⁸

Finally *Structural Integrity* has been defined as the science and technology of the margin between safety and disaster. Tempe has adopted the 2006 International Existing Building Code (IEBC) to encourage the use and reuse of existing and historic buildings. The IEBC defines structural integrity by reference to the absence of dangerous conditions and provides, in the interest of conservation and historic preservation that, where a component or portion of a building is dangerous and is in need of repair, strengthening, or replacement, only that specific component or portion shall be required to be repaired, strengthened, or replaced.^{9 10}

The objective then is to conserve and enhance Historic Integrity, Material Integrity, and Structural Integrity with guidance from the National Register, the Tax Code, and the Building Code carried out under the auspices of the National Park Service, the Internal Revenue Service, and the Tempe Building Official. Our success will effect continued historic eligibility, ensure ongoing economic viability, and remediate life safety concerns while allowing the property to continue to communicate its historic significance. Our process must be interactive to conform to the unique physical and regulatory setting that exists at the property today. As these attributes interact, the selected eligibility criterion will help identify treatment options and determine best or most appropriate repairs.

TREATMENT

The National Historic Preservation Act and the Tax Reform Act each recognize the Secretary of the Interior's Standards for the Treatment of Historic Properties (Standards) as the best authority on providing protection for a wide range of historic properties. The Standards apply to all grant-in-aid projects assisted through the National Historic Preservation Fund, and also apply to a variety of resource types including buildings, sites, structures, objects, and districts. By virtue of their broad applicability, and after decades of use, the Standards today are widely recognized by historic building owners, building managers, preservation consultants, architects, and contractors as the best practice for the treatment of historic properties. In conjunction with the Standards, the Secretary promulgates Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings (Guidelines) which provide for the treatment of specific resource types; buildings, sites, structures, districts, or objects.^{11 12}

Standards and Guidelines promote responsible preservation practices and help us protect irreplaceable community cultural resources. The four treatment approaches have been developed to provide philosophical consistency. Preservation, Rehabilitation, Restoration, and Reconstruction treatments are explained here in hierarchical order. The first treatment, Preservation, places a high premium on the retention of all historic fabric through conservation, maintenance and repair. Preservation reflects a building's continuum over time, through successive occupancies, and recognizes respectful changes and alterations that may have been made. The second treatment, Rehabilitation, emphasizes retention and repair of historic materials, but more latitude is provided for replacement because it is assumed the property has become more deteriorated. Both Preservation and Rehabilitation Standards focus attention on the preservation of those materials, features, finishes, spaces, and spatial relationships that, together, give a property its historic character. The third treatment, Restoration, focuses on the retention of materials from the most significant period in a property's history, while removing materials from other periods. Reconstruction, the fourth treatment, establishes limited opportunities to re-create a non-surviving site, landscape, building, structure, or object in new materials. The following comparison of treatment types calls attention to the consistency of the broad overarching Park Service philosophy by contrasting the unique basis of the individual types.¹³

Preservation

Preservation is a process for sustaining the existing form, integrity, and materials of an historic property. Preservation work focuses on the ongoing maintenance and repair of historic materials and features rather than extensive replacement or new construction. Preliminary measures to protect and stabilize the property are important aspects of Preservation. New exterior additions are not within the scope of this treatment; however, limited and sensitive upgrading of building systems or other code-required work to make properties functional is appropriate in a preservation project. The Secretary of the Interior promulgates eight Standards for Preservation.¹⁴

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Preservation might have been appropriate if distinctive materials, features, and spaces were essentially intact, however, because the Laird - Simpson House now requires more extensive repair and remediation, Preservation is no longer considered a reasonable and feasible treatment.¹⁵

Rehabilitation

Rehabilitation is a process for making possible compatible use of a property through repair, alterations, and additions while preserving portions or features which convey the property's historical, cultural, or architectural values. Rehabilitation is perhaps the most prevalent treatment type in use by the preservation industry because it maintains a high level of authenticity while simultaneously allowing latitude in adapting significant historic resources to compatible modern uses. Rehabilitation returns a property to a state of utility, through repair or alteration, while making possible an efficient contemporary use and simultaneously preserving aspects and features of the property significant to its historic, architectural, and cultural values. Rehabilitation also encompasses related landscape features and considers the site and environment as well as attached, adjacent, or related historic or new construction. The Secretary of the Interior promulgates ten Standards for Rehabilitation.¹⁶

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships. *Note that this is an abbreviation of the standard for Preservation.*
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided. *Note that this is identical to the standard for Preservation.*
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken. *Note that this is identical to the standard for Preservation.*
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved. *Note that this is identical to the standard for Preservation.*
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved. *Note that this is identical to the standard for Preservation.*
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence. *Note that this is a less restrictive variation of the standard for Preservation.*
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used. *Note that this is identical to the standard for Preservation.*
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken. *Note that this is identical to the standard for Preservation.*

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment. *Note that this is an additional standard to those specified for Preservation.*

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. *Note that reversibility is an additional standard to those specified for Preservation.*

Rehabilitation is considered to be the most appropriate treatment for the Laird - Simpson house because of the current physical condition and degree of material integrity still available at the property. Fortunately, the building will be used as it was historically and will not need to be adapted for a change of use with the potential for additional loss of historic character or integrity.¹⁷

Restoration

Restoration is a process for accurately depicting the form, features, and character of a property as it appeared at a particular point in time. Removal of features from other periods in its history and the reconstruction of missing features from the target period of significance form the basis of this treatment. Sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work limited to what is necessary to make properties functional are part of the restoration project. The Secretary of the Interior promulgates ten Standards for Restoration.¹⁸

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period. *Note that this emphasizes point-in-time interpretation over what is otherwise a similar standard for Preservation and Rehabilitation.*

2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken. *Note that this emphasizes point-in-time interpretation over what is otherwise a similar standard for Preservation and Rehabilitation.*

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research. *Note that this emphasizes point-in-time interpretation over what is otherwise a similar standard for Rehabilitation.*

4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal. *Note that this is an additional standard to those specified for Rehabilitation.*

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved. *Note that this emphasizes point-in-time interpretation over what is otherwise a similar standard for Preservation and Rehabilitation.*
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. *Note that this emphasizes point-in-time interpretation over what is otherwise a similar standard for Rehabilitation.*
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically. *Note that this is an additional standard to those specified for Rehabilitation.*
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used. *Note that this is identical to the standard for Preservation and Rehabilitation.*
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken. *Note that this is identical to the standard for Preservation and Rehabilitation.*
10. Designs that were never executed historically will not be constructed. *Note that this is an additional standard to those specified for Preservation and Rehabilitation.*

From the 1950s until the fire, the Laird - Simpson house functioned as a duplex initially for family occupancy and subsequently as an income property. The Owners plan to remove the wood-frame addition at the rear of the property that was constructed to provide additional kitchen and bath facilities necessary for multi-family occupancy and to return the property to its original single-family use. Return to historic occupancy along with replacement in-kind of the original steel casement windows, restoration of the clay brick masonry and the full hip roof are actions consistent with the Restoration treatment. The change from the original clay-tile roof to asphalt shingle is perhaps the greatest single departure from the Restoration approach and brings the campaign of work into philosophical alignment with Rehabilitation utilizing Standard 10.¹⁹

Reconstruction

Reconstruction is a process for depicting the form, features, and detailing of a non-surviving site or building for the purpose of replicating its appearance at a specific period of time and in its historic location. No treatment can recover historic integrity, which once lost, can not be reconstructed. The experience one realizes at the location of an authentic historic property is a composite of sensory perceptions that can not be delivered through imitation no matter how detailed or contrived. The Secretary of the Interior promulgates six Standards for Reconstruction.²⁰

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property. *Note that this is an additional standard to those specified for Preservation, Rehabilitation, and Restoration.*
2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken. *Note that this is an additional standard to those specified for Preservation, Rehabilitation, and Restoration.*
3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships. *Note that this is a similar standard to those specified for Preservation, Rehabilitation, and Restoration.*
4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture. *Note that this is a similar standard to that specified for Restoration.*
5. A reconstruction will be clearly identified as a contemporary re-creation. *Note that this is an additional standard to those specified for Preservation, Rehabilitation, and Restoration.*
6. Designs that were never executed historically will not be constructed. *Note that this is an identical standard to that specified for Restoration.*

Whereas other treatment types provide standards and guidance for restoring or recreating building features, Reconstruction address aspects of treatment necessary to re-create an entire non-surviving property with new material. The difference in Reconstruction is the predominant lack of extant historic material prior to treatment. The amount of intact historic fabric and the number of character defining features still present at the Laird-Simpson House will allow the use of a treatment substantially beyond the need for reconstruction.

Regardless of the treatment, building code requirements will need to be taken into consideration. By predetermining and narrowing down the aspects of integrity that must be conserved, a series of code-required actions can be identified that will minimize further loss of significant materials and historic character. Seismic modifications can be carefully designed to minimize adverse effects to the historic integrity of the Laird - Simpson House. With an informed design program, alterations and construction can minimize material loss and visual change to the character defining features of the historic building.²¹

MEMORANDUM OF UNDERSTANDING

A Memorandum of Understanding (MOU) between the Owners and Tempe HPO has been implemented indicating the Owners intent to rehabilitate the property so as to be eligible for historic designation and listing in the Tempe Historic Property Register and the intent of Tempe HPO to facilitate that designation and listing. The intent of historic designation and listing in the Tempe Historic Property Register is to provide protection for significant properties and archeological sites which represent important aspects of Tempe's heritage; to enhance the character of the community by taking such properties and sites into account during development; and to assist owners in the preservation and restoration of their properties. Reasonable and fair regulations are included in the Tempe Historic Preservation Ordinance as a means of balancing the rights of property owners and the value to the community of conserving and enhancing these significant properties and sites.²²

The Owners have applied for historic designation and listing of the property in the Tempe Historic Property Register although, in its present condition, the property would not be eligible for this action. None the less, the Owners desire to exercise their right to initiate the designation process concurrent with rehabilitation. Accordingly, the Owners and Tempe HPO identified necessary repair work and stipulated conditions whereby HPO could support and HPC could recommend that the property be designated historic and listed it in the Tempe Historic Property Register. Specifically, the Owners agree to commence rehabilitation promptly, to ensure that there is no further loss of historic integrity, and to satisfy the following specific stipulations.

The Memorandum of Understanding stipulates the roof shall remain a full-hip roof faithful to historic form and proportions. The character defining features of the Ranch style house comprise a very limited palate of design elements. In keeping with traditional Ranch styling the original form of the low-pitched roof should be preserved along with eave details and the original depth of the eave overhang which are character-defining features of the historic roof. Appropriate Rehabilitation treatments include identifying, retaining, and preserving roofs and their functional and decorative features including the roof's full-hip shape; decorative features such as uniquely styled rafter-tails; and roofing material such as clay tile, as well as its size, color, and patterning.²³

In the interest of economy, perpetuating the change from the original clay-tile roof to asphalt shingle that first occurred after the period of significance represents perhaps the greatest single departure from the Restoration approach in this campaign of work. The non-durable nature of roofing is consistent with the concept of reversibility expressed in Rehabilitation Standard 10 which states; "*new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*" We are additionally encouraged by substantial NPS and SHPO precedent treating roofing as a non durable material and, therefore, subject to less strict preservation considerations.

Existing spaced sheathing no longer aids in the proper venting of the attic once the tile roof was replaced by asphalt shingle. A diaphragm of sheet material designed to resist lateral load should be installed over the historic material and detailed with adequate

anchorage to guard against wind damage and moisture penetration. This is consistent with the Rehabilitation assumption that existing historic fabric has become damaged or deteriorated over time or is missing and, as a result, more extensive repair and replacement will be required. Latitude is given in the Standards and Guidelines for Rehabilitation to replace extensively deteriorated, damaged, or missing features using either traditional or substitute materials so as to maximize opportunities to improve the efficiency of a contemporary use through sensitive alterations and additions.²⁴

Repair to historic roof framing materials should seek to reinforce existing members and minimize replacement of elements which comprise significant or character-defining features. Repairs should also generally include the limited replacement in kind, or with compatible substitute material, of extensively deteriorated or missing parts of features when there are surviving prototypes such as louvers and decorative rafter tails. Fire damaged elements scheduled to remain will need to be painted to encapsulate smoke odor as well as to help differentiate them from modern-era replacement materials.

The Memorandum of Understanding stipulates the exterior walls shall remain the original clay brick masonry faithful to historic form and proportions but no longer used in a load-bearing capacity in damaged areas. Work done to meet health and safety code requirements, like retrofit measures for energy efficiency, are important aspects of Rehabilitation projects, although usually not a part of the overall process of protecting or repairing character-defining features. Rather, such work is typically assessed for its potential negative impact on the building's historic character and particular care must be taken not to radically change, obscure, damage, or destroy character-defining materials or features in the process of meeting code and energy objectives.

The Laird - Simpson House must retain key physical elements as they were originally configured. This provides insight into life during the period of significance and helps to reveal the preferences, to indicate the availability of particular types of materials, to exemplify technologies, and to reflect contemporary determinants of demand including consumer tastes and preferences, market size, income, prices of related goods, and consumer expectations. In a materials palate as abbreviated as that of the Ranch style house, every element takes on heightened significance and diagnostic value. At the Laird - Simpson House, the architect focused primarily on exploiting the clay masonry brick work in a masterful rendition that exceeds the form of most contemporaneous examples. Divided vertically in classical proportions, a projecting belt course separates a base laid in Running bond from upper walls laid up in Common or American bond. Here is a variation of running bond with a course of full length headers at regular intervals providing structural bonding as well as pattern and texture. Header courses occur at every sixth course and the fenestration is highlighted further by a singular rowlock course. At the base, where we have the most simple of the basic bond patterns, running bond stretchers are embellished by weeping mortar whereas joints in the upper walls are struck, effectively creating the appearance of two different wall materials while using only one type of brick. Rehabilitation should identify, retain, and preserve features of the exterior clay brick masonry walls that are important in defining the overall historic character of the building such as tooling and bonding patterns, and mortar color. Masonry details such as glass block and the cantilevered entry door roof should also be retained and preserved as significant character-defining features.²⁵

Clay brick masonry can be structurally affected by building fires. Damage tends to be concentrated around window openings and doorways but a fire can also affect the load bearing capacity of masonry. A bearing wall exposed to fire will suffer a progressive reduction in strength due to deterioration of the mortar in the same manner as concrete. Although damage is more likely to be caused by expansion or collapse of other structural members, at temperatures of 1000–1500°F, the strength of most masonry mortars is seriously compromised. Cracking can be caused by quenching masonry heated by fire with fire-fighting water. Clay brick masonry can withstand temperatures in the region of 1500°F or more without damage, but under very severe and prolonged heating the surface of the brick may fuse. Spalling may occur with some types of brick, particularly the perforated type. At temperatures of 500–600°F, damage is usually restricted to color changes, such as reddening of iron-bearing mortars. Although not structurally significant, the color change is non-reversible and may be significant for aesthetic reasons.²⁶

Even after a severe fire, clay brick masonry can often be repaired rather than demolished. Tempe first adopted regulations to provide minimum building standards to safeguard life, health, and public welfare on June 12, 1952, when Council adopted the 1949 Edition of the Uniform Building Code, as Section 301(a) of the Tempe City Code. Buildings constructed before the code was adopted were designed and constructed based on best practices and industry standards that evolved over time to protect health and safety. Before building codes existed, insurance companies, professional, and trade organizations instituted standards to reduce risk and policed their members to ensure the public health and safety. The Laird – Simpson House was designed by prominent local architect Kemper Goodwin. Goodwin received his architectural training at the University of Southern California and was licensed to practice architecture in Arizona in 1931. After working for Valley firms for several years he established his own practice in Tempe. Kemper was an active member of several professional organizations and staked his professional reputation on delivering attractive and safe structures.²⁷

Notwithstanding years of service, by today's standards, virtually every house or building constructed before the adoption of the Building Codes is "under-built." A large number of existing buildings and structures do not comply with the current building code requirements for new construction. Although many of these buildings are potentially salvageable, rehabilitation is often cost prohibitive because they may not be able to comply with all the requirements for new construction. At the same time, it is necessary to regulate construction in existing buildings that undergo additions, alterations, renovations, extensive repairs or change of occupancy. Tempe has adopted the 2006 International Existing Building Code (IEBC) to encourage the use and reuse of existing and historic buildings. This code does not restrict the use of new materials, products, or methods of construction, and so the Secretary of the Interior's Standards must be overlaid on the IEBC to provide a comprehensive address of historic preservation considerations in concert with minimum regulations for existing buildings using prescriptive and performance-related provisions. To accomplish this objective, and to make the rehabilitation process easier, the IEBC allows for a controlled departure from full compliance with the technical codes, without compromising the minimum standards for fire prevention and life safety features of the rehabilitated building."²⁸

As a final note on repairing masonry walls and other features by repointing the mortar joints where there is evidence of deterioration such as disintegrating mortar, cracks in mortar joints, or loose bricks, mortar that is softer or more permeable than the masonry units and no harder or more impermeable than the historic mortar must be used to prevent damage to the masonry units. Removing deteriorated mortar should be accomplished by carefully hand-raking the joints to avoid damaging the masonry. Duplicating old mortar in strength, composition, color, and texture, and duplicating old mortar joints in width and in joint profile should be accomplished carefully to bond with and match historic materials. Repairing masonry features by patching, piecing-in, or consolidating the masonry using recognized preservation methods may also include the limited replacement in kind--or with compatible substitute material--of those extensively deteriorated or missing parts of masonry features when there are surviving prototypes. Apply new or non-historic surface treatments such as water-repellent coatings to masonry only after repointing and only if masonry repairs have failed to arrest water penetration problems.^{29 30}

The Memorandum of Understanding stipulates windows shall remain steel casement windows faithful to historic form and proportions and any replacements shall be installed in the existing masonry openings made neither smaller nor larger except in locations where fire safety egress is required.

Newly available, reasonably priced steel windows became popular for their fire-resistant qualities as early as 1890, and the strong metal frame permitted installation of larger windows and windows in series. The ability to have expansive amounts of glass and increased ventilation dramatically changed the designs of late 19th and early 20th century industrial and commercial buildings. Steel windows became standardized, extremely durable, and easily transported, which led to the use of steel windows in every type of construction, from simple industrial and institutional buildings to luxury commercial and apartment buildings. In addition, the thin profiles of metal windows contributed to the streamlined appearance of the Art Deco, Art Moderne, and International Styles, among others. The extensive use of rolled steel metal windows continued until after World War II when cheaper aluminum windows became increasingly popular.³¹

The Ranch style house has very little ornamentation and few character-defining features and the loss of the original steel casement windows made a great impact on the material integrity of the house. Patterns created by the vertical casement sashes and horizontal muntins were important to the continuity of horizontal lines that carried through Ranch facades. This character defining feature was further reinforced by changing the orientation of bricks at the corresponding header course. The horizontal line is an important characteristic of the Ranch style emphasized by uniform elevations of roof ridges, eaves, window openings, window panes, and masonry bonding patterns. Designing and installing new steel sash casement windows will be required because the historic windows (frames, sash and glazing) are completely missing. The key visual pattern to be retained is the twelve-inch vertical dimension of the original window panes. Replacement windows shall be an accurate restoration using historical, pictorial, and physical documentation, replacing in kind the entire window using the same sash and pane configuration and other design details.^{32 33}

If using the same kind of material is not technically or economically feasible a compatible substitute material may be considered or be a new design that is compatible with the window openings and the historic character of the building may be considered. Further consultation with Tempe HPO should be pursued if code compliance issues conflict with preservation practices stipulated in the Memorandum of Understanding.

The objective to conserve and enhance Historic Integrity, Material Integrity, and Structural Integrity is only added on to the more routine requirements of project budget and time of performance. Guidance from Historic Preservation and Building Safety must be readily available to inform the design as well as to assist in addressing any unforeseen conditions once construction is underway. Reconciling National Register and Tax Code requirements with concerns for budget, safety, and scheduling will require additional effort from everyone on the project team. But success will bring commensurate benefits in the form of continued historic eligibility and ongoing economic viability. Tempe HPO has pledged to make the process as smooth as possible given the unique physical and regulatory setting that exists at the property today. Commission advocacy and support will remain critical to this effort.

ENDNOTES

¹ Starling Madison Lofquist, Inc. Consulting Structural and Forensic Engineers, 09/12/2010 report to Farmers Insurance Co, Westlake Village, CA. "Structural Fire Damage Assessment Phil and Elna Rae Zeilinger Residence 1204 South Mill Ave." Report on file at Tempe HPO.

² Tempe Fire Department Car 2700 Battalion 271 Fire Investigation Report 07/25/2010. Report on file at Tempe HPO

³ Tempe Historic Preservation Office Research Report to the Tempe Historic Preservation Commission, 01/13/2011 "LAIRD-SIMPSON HOUSE Tempe Historic Property Register #40" accessed January 27, 2011 online at <http://www.tempe.gov/historicpres/Designations/LairdZeilingerHouse/Research-PDE.pdf>

⁴ City of Tempe Historic Preservation Commission [Tempe HPC] LAIRD [ZEILINGER] HOUSE PUBLIC MEETING SUMMARY accessed 01/12/2011 online at: <http://www.tempe.gov/historicpres/Designations/LairdZeilingerHouse/HPC-120910MtgSummary.pdf> "On December 9, 2010, Tempe Historic Preservation Commission held a public meeting to discuss and consider advocacy for at-risk historic properties including the circa 1940 Laird [Zeilinger] House, located at 1204 South Mill Avenue in the historic 1924 Park Tract Subdivision. At that meeting the commission reached consensus to conditionally support a nomination for historic property designation and listing in the Tempe Historic Property Register of the Laird [Zeilinger] House on the basis of its association with the lives of significant persons in or past including; Edna V. and Hugh E. Laird and Ruby and Clayborn E. Simpson."

⁵ City of Tempe Historic Preservation Office, Memorandum of Understanding entered into as of January 13, 2011, by and between Elna Rae Properties, LLC and the City of Tempe (Historic Preservation Office) with regard to historic designation and listing in the Tempe Historic Property Register of the 1940 Laird (Zeilinger) house located at 1204 South Mill Avenue. On file at Tempe HPO

⁶ City of Tempe Administrative Code Article I, Section 8-100 Of The Tempe City Code Section 102.12 – Historic buildings, accessed January 27, 2011 online at http://www.tempe.gov/bsafety/bldgcodeamend/2007_Admin_Code.pdf "Repairs, alterations and additions necessary for the preservation, restoration, rehabilitation or continued use of a building, structure, or its building service equipment may be made without conforming to the requirements of the technical codes when authorized by the Building Code Advisory Board of Appeals, provided:

1. The building or structure has been designated by official action of the legally constituted authority of this jurisdiction as having special historical or architectural significance, and
2. Unsafe conditions as described in this Chapter are corrected, and
3. The restored building or structure and its building service equipment will be no more hazardous based on life safety, fire-safety and sanitation than the existing building as determined by the building official.

Exception: Repairs, alterations and additions necessary for the preservation, restoration, rehabilitation or continued use of a building, structure, or its building service equipment shall be permitted to comply with the provisions of the International Existing Building Code.

⁷ National Park Service, National Register Bulletin 15b “How to Apply the National Register Criteria for Evaluation” accessed 01/10/2011 online at: <http://www.nps.gov/nr/publications/bulletins/nrb15/> “Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. The choice and combination of materials reveal the preferences of those who created the property and indicate the availability of particular types of materials and technologies. Indigenous materials are often the focus of regional building traditions and thereby help define an area's sense of time and place.”

⁸ National Park Service, “Incentives: a guide to the Federal Historic Preservation Tax Incentives Program” accessed 01/10/2011 online at: http://www.nps.gov/hps/tps/tax/incentives/essentials_6.htm “Once the integrity of a building has been lost due to deterioration, damage, or previous alterations, it can never be regained. While new material can exactly copy significant features, material integrity itself can never be re-created. It is important to select a building for rehabilitation that retains its basic physical integrity before rehabilitation.

⁹ Roberts, Steve PhD., 1998 *Engineering Materialism and Structural Integrity*, University of Oxford accessed 01/10/2011 online at: <http://www.tech.plym.ac.uk/sme/uoa30/structur.htm> “Drivers in the quest for structural integrity have been primarily financial, involving the desire of manufacturers and investors to maximize return on investment, the desire of insurers to have a pre-defined risk, and the possibility of litigation in the event of a failure. One can loosely translate the title in terms of financial drivers as: The desire to make money through, and by, engineering has led to greater structural reliability. Its engineering import can be summarised as: The application of science and artful working in order to stress materials such that the arrangement and mutual relation of parts of complex structures remain in an unimpaired and complete state.”

¹⁰ International Code Council, 2006 – *International Existing Building Code 2006* accessed 01/10/2011 online at: <http://www.tempe.gov/historicpres/docs/2003%20IEBC-HPC011206.mht> “This code is founded on principals intended to encourage the use and reuse of existing buildings that adequately protect public health, safety, and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products, or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products, or methods of construction. The IEBC is a comprehensive existing building code that establishes minimum regulations for existing buildings using prescriptive and performance-related provisions. A large number of existing buildings and structures do not comply with the current building code requirements for new construction. Although many of these buildings are potentially salvageable, rehabilitation is often cost prohibitive because they may not be able to comply with all the requirements for new construction. At the same time, it is necessary to regulate construction in existing buildings that undergo additions, alterations, renovations, extensive repairs or change of occupancy. To accomplish this objective, and to make the rehabilitation process easier, the IEBC allows for a controlled departure from full compliance with the technical codes, without compromising the minimum standards for fire prevention and life safety features of the rehabilitated building.”

¹¹ U.S. Congress, National Historic Preservation Act of 1966, as amended through 2006, [with annotations] an Act to Establish a Program for the Preservation of Additional Historic Properties throughout the Nation, and for Other Purposes. (Public Law 89-665; 16 U.S.C. 470 et seq.) accessed 01/10/2011 online at: <http://www.achp.gov/docs/nhpa%202008-final.pdf> “The Congress finds and declares that —

(1) the spirit and direction of the Nation are founded upon and reflected in its historic heritage;
(2) the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people;

(3) historic properties significant to the Nation's heritage are being lost or substantially altered, often inadvertently, with increasing frequency;

(4) the preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans”

¹² U.S. Congress, Tax Reform Act of 1986 (Pub.L. 99-514, 100 Stat. 2085, enacted October 22, 1986 Internal Revenue Code Section 47 [formerly Section 48(g)]) General Explanation of the Act prepared by Joint Committee on Taxation accessed 01/10/2011 online at:

<http://www.jct.gov/jcs-10-87.pdf> “The act established the current tax incentives for preservation. The Federal Historic Preservation Tax Incentives program encourages private sector rehabilitation of historic buildings and is one of the nation's most successful and cost-effective community revitalization programs. It generates jobs and creates moderate and low-income housing in historic buildings. The program is administered by National Park Service and the Internal Revenue Service in partnership with State Historic Preservation Offices.”

¹³ Code of Federal Regulations, Title 36, Parks, Forests, and Public Property, Chapter I, (“National Park Service, Department of the Interior”), Parts 1 to 99, Revised as of July 1, 1998, p. 329, it states: PART 68--The Secretary of the Interior's Standards for the Treatment of Historic Properties. AUTHORITY: National Historic Preservation Act of 1966, as amended, (16 U.S.C. 470 et seq.); Section 2124 of the Tax Reform Act of 1976, 90 Stat. 1918; EO 11593, 3 CFR Part 75 (1971); sec. 2 of Reorganization Plan No. 3 of 1950 (64 Stat. 1262). Federal Register Source: Volume 60, page 35843, July 12, 1995.

¹⁴ National Park Service, Standards for Preservation and Guidelines for Preserving Historic Buildings accessed 01/10/2011 online at:

http://www.cr.nps.gov/hps/tps/standguide/preserve/preserve_index.htm “When the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, Preservation may be considered as a treatment. Prior to undertaking work, a documentation plan for Preservation should be developed.”

¹⁵ -ibid “In Preservation, the options for replacement are less extensive than in the treatment, Rehabilitation. This is because it is assumed at the outset that building materials and character-defining features are essentially intact, i.e, that more historic fabric has survived, unchanged over time. The expressed goal of the Standards for Preservation and Guidelines for Preserving Historic Buildings is retention of the building's existing form, features and detailing. This may be as simple as basic maintenance of existing materials and features or may involve preparing a historic structure report, undertaking laboratory testing such as paint and mortar analysis, and hiring conservators to perform sensitive work such as reconstituting interior finishes. Protection, maintenance, and repair are emphasized while replacement is minimized.”

¹⁶ National Park Service, Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings accessed 01/10/2011 online at: http://www.cr.nps.gov/hps/tps/standguide/rehab/rehab_index.htm “When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, Rehabilitation may be considered as a treatment. Prior to undertaking work, a documentation plan for Rehabilitation should be developed.”

¹⁷ -ibid “In Rehabilitation, historic building materials and character-defining features are protected and maintained as they are in the treatment Preservation; however, an assumption is made prior to work that existing historic fabric has become damaged or deteriorated over time and, as a result, more repair and replacement will be required. Thus, latitude is given in the Standards for Rehabilitation and Guidelines for Rehabilitation to replace extensively deteriorated, damaged, or missing features using either traditional or substitute materials. Of the four treatments, only Rehabilitation includes an opportunity to make possible an efficient contemporary use through alterations and additions.”

¹⁸ National Park Service, Standards for Restoration and Guidelines for Restoring Historic Buildings accessed 01/10/2011 online at: http://www.cr.nps.gov/hps/tps/standguide/restore/restore_index.htm “Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.”

¹⁹ -ibid “When the property's design, architectural, or historical significance during a particular period of time outweighs the potential loss of extant materials, features, spaces, and finishes that characterize other historical periods; when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned, Restoration may be considered as a treatment. Prior to undertaking work, a particular period of time, i.e., the restoration period, should be selected and justified, and a documentation plan for Restoration developed.”

²⁰ National Park Service, Standards for Reconstruction and Guidelines for Reconstructing Historic Buildings accessed 01/10/2011 online at: http://www.cr.nps.gov/hps/tps/standguide/reconstruct/reconstruct_index.htm “Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

²¹ -ibid “When a contemporary depiction is required to understand and interpret a property's historic value (including the re-creation of missing components in a historic district or site); when no other property with the same associative value has survived; and when sufficient historical documentation exists to ensure an accurate reproduction, Reconstruction may be considered as a treatment. Prior to undertaking work, a documentation plan for Reconstruction should be developed.”

²² Tempe City Code Chapter 14A - HISTORIC PRESERVATION accessed 01/12/2011 online at: <http://www.tempe.gov/citycode/14aHistoricPreservation.htm> "It is the intent of the city to make ownership of a landmark, historic property or property within an historic district as beneficial as possible. In addition to the intangible benefits of owning a property recognized as an important community resource, Tempe HPO/HPC whenever possible, provides owners with the assistance in locating potential sources of financial assistance and tax credits; assistance in preparing grant applications and potential third party sponsorship; and with technical assistance and referrals."

²³ City of Tempe Roosevelt Addition Historic District Design Guidelines approved 23 March 2010, accessed 01/12/2011 online at: <http://www.tempe.gov/historicpres/Designations/RooseveltAdditionHD/RAHD-DG-FINAL1.pdf> "The Ranch style drew its inspiration from various sources including early Prairie style houses designed by Frank Lloyd Wright. The simple and sparsely adorned house form reflected romantic imagery of the past and new social trends toward informality and casual home life embodied in post-war suburbia."

²⁴ National Park Service "The Rehabilitation Approach" accessed 01/12/2011 online at: http://www.nps.gov/hps/tps/standguide/rehab/rehab_approach.htm "In Rehabilitation, historic building materials and character-defining features are protected and maintained as they are in the treatment Preservation; however, an assumption is made prior to work that existing historic fabric has become damaged or deteriorated over time and, as a result, more repair and replacement will be required. Thus, latitude is given in the Standards for Rehabilitation and Guidelines for Rehabilitation to replace extensively deteriorated, damaged, or missing features using either traditional or substitute materials. Of the four treatments, only Rehabilitation includes an opportunity to make possible an efficient contemporary use through alterations and additions."

²⁵ Tempe Historic Preservation Office Research Report to the Tempe Historic Preservation Commission, 01/13/2011 "LAIRD-SIMPSON HOUSE Tempe Historic Property Register #40" accessed 01/13/2011 online at <http://www.tempe.gov/historicpres/Designations/LairdZeilingerHouse/Research-PDE.pdf>

²⁶ Ingham, Jeremy 2009, Forensic Engineering Of Fire-Damaged Structures accessed 01/13/2011 online at: http://www.halcrow.com/Documents/fire_safety/forensic_engineering.pdf "Repairs to fire-damaged structures should provide the strength, fire resistance, durability and appearance appropriate to the proposed use and projected design life of the building. The intended use for the structure and the objectives for the repair and the requirements for code compliance should be agreed with the building owner before commencing the design of the repair work."

²⁷ City of Tempe Historic Preservation Office Archive KARL 2001.0000.0118 "On 06/12/0952, Tempe City Council adopts 1949 Edition of the Uniform Building Code, as Section 301(a) of the Tempe City Code. This was the first Tempe building regulation to provide minimum standards to safeguard life, limb, health, property and public welfare."

²⁸ National Park Service Preservation Brief 41 “The Seismic Retrofit of Historic Buildings Keeping Preservation in the Forefront (David W. Look, AIA, Terry Wong, PE, and Sylvia Rose Augustus) accessed 01/13/2011 online at: <http://www.nps.gov/hps/tps/briefs/brief41.htm> “Seismic strength within buildings is achieved through the reinforcement of structural elements. Such reinforcement can include anchored ties, reinforced mortar joints, braced frames, bond beams, moment-resisting frames, shear walls, and horizontal diaphragms. Most historic buildings can use these standard, traditional methods of strengthening successfully, if properly designed to conform to the historic character of the building. In addition, there are new technologies and better designs for traditional connection devices as well as a greater acceptance of alternative approaches to meeting seismic requirements. While some technologies may still be new for retrofit, the key preservation principles previously outlined should be applied, to ensure that historic buildings will not be damaged by them.”

²⁹ National Park Service Guidelines for Rehabilitation of Historic Masonry, accessed 01/13/2011 online at: http://www.nps.gov/hps/tps/standguide/rehab/rehab_masonry.htm “The variety and arrangement of the materials is important in defining the historic character, changing the raised or weeping mortar joints, for example, would drastically alter the character.” An important character-defining feature of the Ranch style house is the masonry belt course with Flemish bond above and running (or common) bond below. Mortar joint characteristics and bond patterns contribute to the architectural character of these houses and should be preserved.

³⁰ National Park Service Preservation Brief 2 “Repointing Mortar Joints in Historic Masonry Buildings (Robert C. Mack, FAIA, and John P. Speweik) accessed 01/13/2011 online at: <http://www.nps.gov/hps/tps/briefs/brief02.htm> “In creating a repointing mortar that is compatible with the masonry units, the objective is to achieve one that matches the historic mortar as closely as possible, so that the new material can coexist with the old in a sympathetic, supportive and, if necessary, sacrificial capacity. The exact physical and chemical properties of the historic mortar are not of major significance as long as the new mortar conforms to the following criteria:

- (1) The new mortar must match the historic mortar in color, texture and tooling. (If a laboratory analysis is undertaken, it may be possible to match the binder components and their proportions with the historic mortar, if those materials are available.)
 - (2) The sand must match the sand in the historic mortar. (The color and texture of the new mortar will usually fall into place if the sand is matched successfully.)
 - (3) The new mortar must have greater vapor permeability and be softer (measured in compressive strength) than the masonry units.
 - (4) The new mortar must be as vapor permeable and as soft or softer (measured in compressive strength) than the historic mortar. (Softness or hardness is not necessarily an indication of permeability; old, hard lime mortars can still retain high permeability.)
- Analysis of unweathered portions of the historic mortar to which the new mortar will be matched can suggest appropriate mixes for the repointing mortar so that it will not damage the building because it is excessively strong or vapor impermeable.

³¹ National Park Service Preservation Brief 13 “The Repair and Thermal Upgrading of Historic Steel Windows (Sharon C. Park, AIA), accessed 01/13/2011 online at: <http://www.cr.nps.gov/hps/tps/briefs/brief13.htm> “The Secretary of the Interior's Standards for Rehabilitation require that where historic windows are individually significant features, or where they contribute to the character of significant facades, their distinguishing visual qualities must not be destroyed. Further, the rehabilitation guidelines recommend against changing the historic appearance of windows through the use of inappropriate designs, materials, finishes, or colors which radically change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame.”

³² City of Phoenix Historic Preservation Office Steel Casement Window Repairs accessed 01/13/2011 online at: <http://phoenix.gov/historic/steel.pdf> "For replacement units, corrosion resistance can be achieved most effectively by hot dip galvanizing to BS 729. This simple process takes only minutes to carry out. The frames are fully immersed in a bath of molten lead and zinc at temperatures reaching 450 degrees Celsius, so that complete surface coverage is therefore achieved, including inner and outer surfaces, awkward corners and narrow gaps. Galvanized metal frames can be polyester powder coated to BS 6497 in a range of colors and finishes, matt, semi or high gloss. Applicators provide a warranty of 15 years but 20 years is not uncommon before re-painting is necessary."

-complete as of 01/13/11

³³ City of Tempe Roosevelt Addition Historic District Design Guidelines approved 23 March 2010, accessed 01/12/2011 online at:
<http://www.tempe.gov/historicpres/Designations/RooseveltAdditionHD/RAHD-DG-FINAL1.pdf>