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FISHER MANSION HISTORIC STRUCTURE REPORT

FEBRUARY 05, 2010

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SECTION ONE: INTRODUCTION & EXECUTIVE SUMMARY

INTRODUCTION

The Fisher Mansion and Carriage House, located on Salt Lake City's west side at 1206 West 200 South, were designed by Richard Kletting and constructed in 1893 for Albert and Alma Youngberg Fisher. This Historic Structure Report evaluates the historic elements of these two buildings, their potential options for future preservation and re-use, and requirements affecting their re-use. Numerous suggestions for new uses of the buildings have been made since Salt Lake City made the decision to retain the property, which was purchased in 2006 for the purposes of extending the Jordan River Parkway. The processes and results of this report are intended to advance the task of finding an appropriate and viable re-use for the property that respects the character of these significant historic structures.

It is the intent that, at a minimum, any re-use project for the property will meet the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings (SOTIS). The following information from the National Park Service website, gives a brief summary of the standards for the four treatments.

"The Standards for the first treatment, Preservation, require retention of the greatest amount of historic fabric, along with the building's historic form, features, and detailing as they have evolved over time. The Rehabilitation Standards acknowledge the need to alter or add to a historic building to meet continuing or new uses while retaining the building's historic character. The Restoration Standards allow for the depiction of a building at a particular time in its history by preserving materials from the period of significance and removing materials from other periods. The Reconstruction Standards establish a limited framework for re-creating a vanished or non-surviving building with new materials, primarily for interpretive purposes."

METHODOLOGY

This report builds upon a Historic Structure Report done in 2008 for Salt Lake City Corporation by students from the University of Utah College of Architecture and Planning. Information and documentation from the U of U HSR have been incorporated into this report. In some sections the information was incorporated directly with minor updates, while other sections include additional information, modifications, and updates that have resulted from the consultant team's opportunity to conduct more in-depth and hands-on investigations and analyses of the buildings and site.

In general, the narrative of this report is presented in a three-part format with Historical Data and a short description of each building system or component presented first, followed by an analysis of the Existing Condition(s) and concluding with Recommendations. Recommendations are presented for two treatment approaches to the building – that of a preservation approach and that of a restoration approach. As specific uses for the buildings are identified, it is anticipated that the preservation approach, which serves to protect and stablize a property until a use and treatment are identified, may shift into a rehabilitation approach.

EXECUTIVE SUMMARY

CONTEXT

Architect Richard K.A. Kletting designed the Fisher Mansion and Carriage House for Albert and Alma Youngberg Fisher, located adjacent to the Jordan River on 200 South Street. Proximity to work is assumed to be the driving factor behind the Fisher's locating their residence in what was a sparsely populated neighborhood at the time of construction in 1893. Albert Fisher was the president of the Fisher Brewing Company, which was located at 160 South 1100 West. The neighborhood around the Fisher Mansion became more populated after the turn of the twentieth century, with residences lining the streets to the south and east, though most were of a more moderate scale. The area to the west and the north, however, saw the addition of more industrial uses. When Interstate 80 was constructed, all of the homes on the south side of 200 South were demolished. The Fisher Mansion became an isolated property, from the physical barrier of the interstate as well as by its industrial neighbors. Despite the loss of its neighborhood context, the home remained inhabited and maintained.

Aerial view of Fisher Mansion neighborhood looking northwest, 1958

HISTORY OF USES

Prior to its purchase by Salt Lake City, the Fisher Mansion went through three distinct periods of use since its construction in 1893.

Period I: 1893 to 1944

During the first 51 years, the Fisher family used the mansion as its original intended use, that of a family residence. Albert Fisher died in 1917. Alma Youngberg Fisher, Albert's wife, continued to live in the home until her death in 1940. Beginning in about 1918, Alma's daughter and son-in-law, Alice Fisher Davidson and Frederic Davidson, lived in the home with Alma until her death. After Alma's death, the title to the property was transferred to Alice. The Davidson's remained in the home until 1944.

Period II: 1945 to 1970

Upon moving out of the home, the Davidson's leased the mansion to the Catholic Church beginning in 1945. From 1945 until 1970 it was used as a convent by Our Lady Queen of Peace and Our Lady of Victory Missionary Sisters.

Period III: 1970 to 2006

Beginning in 1970 it became St. Mary's Home for Men, a residential substance abuse treatment facility. In 1973, Alice Fisher Davidson bequeathed the property to the Roman Catholic Bishop of Salt Lake City. The mansion remained in use as St. Mary's Home for Men until the property was purchased by Salt Lake City in 2006.

The majority of alterations made to the home were done in efforts to accommodate a high number of occupants and meet the associated building code requirements. During its use as a family residence, it is notable that is was occupied only by the Fisher family.

This may have been a significant contributing factor to the minimal amount of interior updates and alterations during its first 50-year period. Absent are signs of many layers of wallpaper and paint, as is often seen in homes of this age. Initial analysis indicates a single layer of wallpaper and only two to three layers of paint on most of the walls.

The Fisher Mansion is remarkable for the high degree of architectural integrity it retains, especially considering its history of higher intensity uses over the past 65 years. While several alterations were made to accommodate these higher intensity uses, it is clear that, as lessees and subsequent owners, the Catholic Church gave a high degree of stewardship and respect to the property, its history, and its architectural details.

Probable changes made during the initial period of use as the Fisher family's home:

- Enclosure of small northwest porch (c. 1920s)

Probable changes made during the second period of use:

- Conversion of the parlor into a chapel for the convent
- Addition of the rear third story room as additional bedroom space (c. 1940s; addition is visible in 1950 aerial photo)
- Addition of hand rails on rear staircase
- Subdivision of southwest bedroom, second floor
- Access to butler's pantry from hallway
- Painting/stenciling of parlor, wallpaper painted over

Probable changes made during the third period of use:

- Expansion and enclosure of northeast porch
- Addition/expansion of previously enclosed northwest porch, which now connects to the north end of the parlor
- Floor tile installed in kitchen, northwest addition, and parlor
- Updates/remodel of first floor bathroom, second level bathroom
- Enclosure of main staircase
- Covering of skylight
- Removal of railing in attic surrounding skylight

SUMMARY OF HISTORICALLY SIGNIFICANT ARCHITECTURAL ELEMENTS

Exterior

- Brick – unpainted walls
- Sandstone lintels, sills, columns, foundation walls, decorative plaques
- Stamped metal frieze & ornamental foliation
- Wood eaves
- Wood double-hung windows
- Wood windows with curved glass
- Wood full-length balcony access windows
- Leaded glass transom windows
- Exterior front doors with intact hardware
- Metal doorbell and plate
- Gutter and downspout system
- Porch – sandstone floor, columns, wood decorative spindles, wood beadboard ceiling, sandstone support arches
- Original dormers on south and west sides
- Corbelled brick chimneys (4)

Historic view of Fisher Mansion, looking northeast.

Interior

- Flooring: Ceramic tile floor (entrance vestibule, main level bathroom); Oak veneer flooring throughout main and second levels
- Wall finishes: Original plaster and lath; Wood wainscoting; Embossed wallpaper (has since been painted over)
- Wood trim: never been painted, original stain; Original baseboard, Door casing, Window casing, Double archway in foyer
- Majority of original stile and rail wood panel doors
- Transoms over doors
- Glass bi-fold doors
- Double doors into vestibule, parlor
- Grand staircase (missing balusters)
- Fireplace mantles and tile surrounds
- Original electric outlets (on parlor fireplace mantle)
- Light fixtures
- Rear staircase
- Built in cabinets in library
- Metal heating vent covers (majority, some missing)
- Skylight (missing some panels)
- Sink in main level bathroom
- Pocket door on second level separating family space from servant space
- Cistern room, glass doors into cistern room

Removed/Missing Elements

- Balcony railing
- Curved glass/leaded glass in transoms of southwest bay windows on first and second levels; and southeast bedroom on second level
- Original windows for attic level
- Original exterior door for northwest entry
- Several interior wood panel doors
- Grand staircase balusters
- Railing/balustrade around skylight on attic level

Altered/Updated Elements

- Porch: new front steps, side walls; railing (cast concrete) – to replace original sandstone, which was deteriorating
- Rear window placement – original butler's pantry was located east of the kitchen; its window was removed and a new shorter, square window was inserted at a position shifted west. The brick was patched well; the lintel of the original window remains in place.
- Transom over northwest doorway (covered, likely still intact)
- Wallpaper (painted over)
- Second level bathroom (unknown what is underneath raised floor)
- Suite on second level for housekeeper/domestic staff

RE-USE/RENOVATION CONSIDERATIONS

The objective of re-use strategies will need to balance several factors, including life safety issues and how to approach any structural upgrades without compromising architectural integrity. Some of the structural approaches described will have adverse effects on some of the interior architectural elements. For example, the installation of diaphragms will affect the wall-ceiling areas due to the visability of the connectors if done on the underside of the joists, or will require removal of flooring if done on the top of the joists. Yet, the value of installing these diaphragms is a cost-effective approach to improving the structural integrity and improving life-safety for the building's occupants.

Additional considerations regarding the degree of renovation will need to be balanced with desirable uses. For example, the cost of a full-scale restoration may not be feasible for a small office tenant. Also, a higher intensity use may not be compatible with the objective of conducting a full restoration of the interior.

SECTION TWO: BUILDING & SITE DESCRIPTION

BUILDING DESCRIPTION

BACKGROUND

The Fisher mansion was built for Albert Fisher, a German immigrant who founded the Fisher Brewing Company in 1884. Of the several breweries established in Utah in the late 1800s, Fisher Brewing was the only one to return to operation after the repeal of Prohibition. The brewery continued to operate under the direction of the Fisher family until 1972.

Richard K. A. Kletting designed the two-story, twelve-room house that had an estimated construction cost of $13,000. The Fisher Brewing Company was located nearby at 160 S. 1100 West and Fisher, who had been living at the brewery, desired a nearby location for his home. The site of the home was away from the crowded central city, located adjacent to the Jordan River, and provided a view of the Wasatch Mountains to the east.

The residence is an architecturally and historically significant structure for being an excellent example of the Victorian Eclectic style in Utah, as well as for its association with Albert Fisher. It is also significant as one of the relatively few extant residential designs done by Kletting. First nominated to the National Register of Historic Places in 1983, but not listed at the time due to owner objection, the property was listed in 2008.

ARCHITECTURAL STYLE

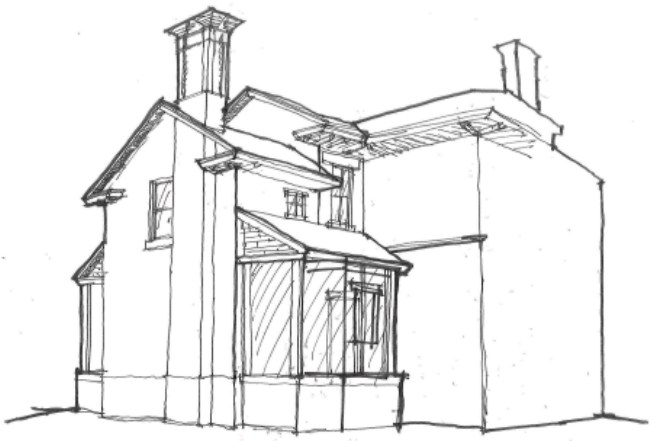
The Albert Fisher mansion is a two and one-half story brick and stone house designed in the Victorian Eclectic style. Architect Kletting designed the large-scale house using a combination of materials and decorative elements. It has maintained its architectural integrity since its construction in 1893. The overall stylistic and decorative qualities of the mansion make it one of the best examples of the more elaborate Victorian Eclectic residences constructed in Salt Lake City in the last two decades of the nineteenth century. Located to the rear of the house is a two-story brick carriage house, also designed by Kletting in the same style as the house. Both buildings are situated on a one-acre lot adjacent to the east bank of the Jordan River.

The house is a combination of the central block with projecting gables type and the four square type. While its massing and layout are asymmetrical in nature, the facade projects an overall sense of balance.

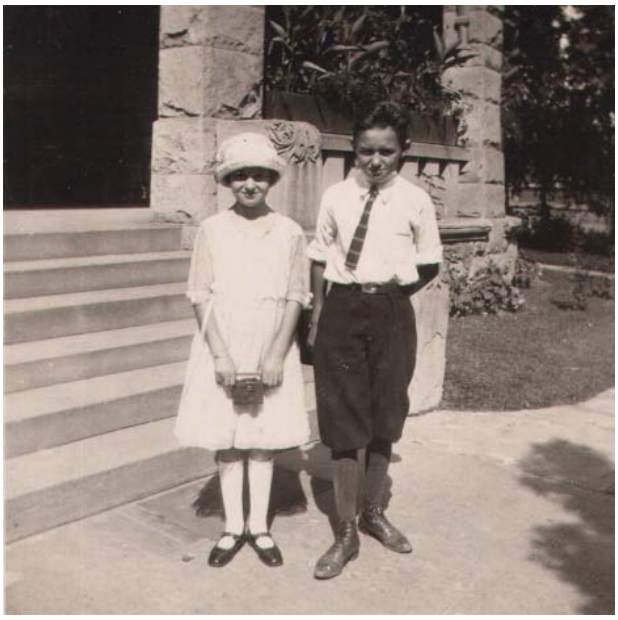
Characteristics of the Eclectic style include a combination of Victorian and Classical stylistic elements,

View of the front facade of the Fisher Mansion, prior to the restoration of the front porch steps.

View of the rear of the mansion, camera facing southeast



Sketch of the likely original appearance of the rear of the mansion



Historic photo of Fisher children in front of the mansion

irregular plan, asymmetrical façade and roof form, bay windows, decorative porches, projecting door and window lintels, leaded and stained-glass transom windows, and patterned belt courses.

The Fisher Mansion has many of the above characteristics, yet the design is also notable for showcasing the massing and lines of the home. Kletting designed the building on a large scale with an unusual combination of features and details. Elements of the Queen Anne appear in the wrap-around porch, which features Eastlake and Romanesque details as well. The result is a distinctively unique example of the Victorian Eclectic style. The carriage house reflects the massing and style of the house.

LATER ALTERATIONS

While the front facade of the mansion remains largely unchanged since its construction, the rear of the mansion has undergone several modifications. On the 1911 Sanborn Map, the rear portion of the mansion is identifed as being one and one-half stories of brick with single story wood frame porches on the east and west sides. Evaluation of the rear (north) chimney reveals evidence of the original gabled roof line. In the 1940s, likely to provide additional bedroom space for the convent, a third story room with a shingled exterior was added. On the main level of the building, the two rear side porches have been enclosed and expanded. The roof lines of the original porches are still present in the larger additions that have encompassed them. The current porch additions date to 1993, when upgrades were made, including expansion of the kitchen facilities. The profile and materials of the third floor addition

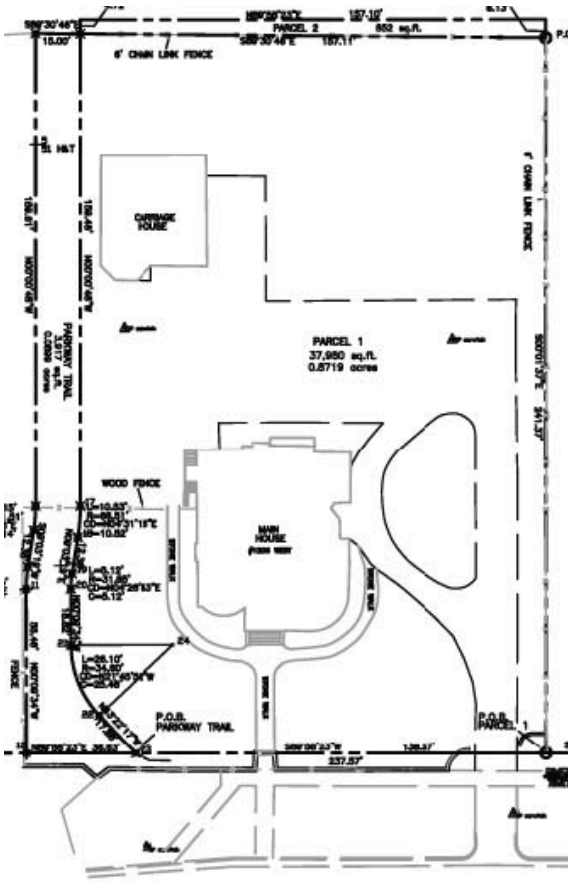
are similar to the earlier dormers and have attained historical significance of their own.

SITE DESCRIPTION

HISTORICAL DATA & EXISTING CONDITIONS

Over the years the landscape surrounding the Fisher mansion site has been modified to accommodate the changing use of the building. The original landscape was once typical of Victorian yards in the Salt Lake area. The landscape was originally designed with the purpose of showing off the architecture of the building, providing climate control for the structure, servicing functional uses for the owners, and for providing outdoor relaxation and recreation for the building's occupants. The aesthetic quality of the landscape would have originally focused on framing views into and out of the home. This can be seen in the formal entrance layout that features a wide sandstone walkway leading to the front porch. The front-walkway and landscaping was primarily bilaterally symmetrical along the axis leading to the front doors. This symmetry was emphasized by the placement of two weeping mulberry trees and two stone spigots placed on either side of the walkway. These features still exist today. The original drive access to the building was located on the western edge of the site, as indicated on the 1911 Sanborn map. The drive would likely have consisted of concrete travel strips, macadam, or a compacted crushed stone. Photographic evidence and on-site archeological investigations may be used to determine the original layout and material quality of the original hardscape. By 1950, a more substantial concrete driveway was in place on the east side of the property, with a semi-circular drive providing access to the east porch of the mansion. This driveway configuration is what currently exists. Additionally, a significant portion of the rear landscape has been paved to provide more on-site parking. The locations of paths around the building have also been altered as additions to the structure have changed the exterior circulation. A fountain, installed while the property housed St. Mary's Home for Men, is located in

Historic photo of a rustic twig gazebo, located on the northeast corner of the mansion.



Parcel map indicating location of the Jordan River Parkway in relation to the site

Front view of the mansion with the iron fence and sandstone wall in the foreground

Southeast corner of the mansion; view of reconstructed porch railing and porch support arches.

the lawn area east of the carriage house. Historically, an octogonal rustic twig gazebo was located to the northeast of the mansion. During the summer months, foliage growth over the gazebo created a shaded outdoor room.

Hardscape

Existing original hardscape features include the main sandstone walkway approaching the primary entrance of the building; the retaining wall of rough-hewn sandstone block located along the south property line; and the ornamental iron fence attached to the top of the retaining wall. New existing components include the concrete drive and parking, pond feature located in the north garden, the raised flower bed shaped like a cross in the south lawn, and the wood accessibility ramp located on the northwest corner of the building.

Plantings

Original plantings include large shade trees including American Elm (Ulmus americana), Boxelder (Acer negundo), Horse Chestnut (Aesculus hippocastanum), Linden (Tilia sp.), Silver maple (Acer saccharinum). Original fruiting and ornamental trees include Mulberry (Morus alba), Plum (Prunus sp.), Pear (Pyrus sp.), and Apple (Malus sp.). There is evidence of an original orchard on the northeast portion of the property, along with a kitchen garden that appears to have been located behind the carriage house. More recently evergreen trees including Spruce (Picea sp.) and Arborvitae (Thuja sp.) have been planted in the south front-yard and northeast portions of the property. This includes the placement of two spruce trees that are located too close to the foundation on either side of the front-porch steps.

Landscape Infrastructure

The existing irrigation system consists of hose bibs. Hoses are moved around the site by maintenance staff

during the warmer months.

RECOMMENDATIONS

The site design should be adapted to accommodate the new use of the structure, while restoring as much of the original landscape to an 1893 period of significance. It will be especially important to examine the circulation issues related to the new use of the building – specifically parking, accessibility, and the long term maintenance and sustainability of the site and landscape.

Hardscape

- If possible, attempts should be made to provide offsite parking on an adjacent parcel, such as the parking lot located directly to the north of the property.
- Re-design the existing parking to provide vehicular access for drop-off, delivery, and handicap parking.
- Provide bicycle parking
- Reduce the general amount of on-site paving to minimize visual impact on existing structures
- Avoid paving directly against building foundations; remove existing paving that sits against building surfaces
- Use a permeable material for any new paving to allow for water infiltration, and
- Consider using types and methods of paving available in the late 1800's, such as historic concrete, macadam asphalt, stone pavers, and compacted decomposed granite or crushed stone

Landscape/Plantings

Original plant material should be preserved wherever possible, or replaced with specimens that match the original plantings. Seasonal observations/site archeol-

Front lawn feature, installed when the property was utlized by the Catholic church

Two views of the fountain feature located in the lawn area east of the carriage house, installed when the property housed St. Mary's Home for Men

Rear yard behind the carriage house

Historic photo showing original landscape plantings and trees in the front yard

Historic photo of ladies playing croquet on the lawn

ogy could determine the original locations of planting beds, which should then be restored with period plantings. The recent evergreen plantings should be removed, as they are planted too close to the building, are blocking views and will eventual cause damage to the building. Also, vines attached to the structure should be removed. Depending on the proposed use of the building, the water feature that was added in the back yard could be removed, as it may be a maintenance issue, and the back portion of the property could be restored to a designated period of significance. A working garden could be created in the location of the original kitchen garden and operated as a demonstration garden or community garden to illustrate small-scale agriculture in promotion of sustainability.

Sustainable Site Strategies/Infrastructure

Strategies include amending the soils under the recommendations of a Landscape Architect and Soil Scientist to build healthy soils that retain moisture, provide nutrients to plant material, and allow for deep rooting of plant material. Minimal irrigation intervention should be required and would be limited to establishing lawn areas and drip irrigation for new shrub beds. The planting design should focus on providing 100% plant coverage and maximum canopy to shade the ground surfaces, providing cooling evapotranspiration, and to create a healthy living plant community that requires minimal maintenance. Plant species should be in keeping with the original plantings used on the site or with plant varieties that were widely available during the Victorian period. Plants selected should also be drought-tolerant and native Utah or adapted plant material that has proven successful under Salt Lake City's climactic and soil conditions.

SECTION THREE: EXTERIOR ANALYSIS

FOUNDATIONS AND FOOTINGS

Historical Data/Description

The foundation walls are comprised of cut, rough-faced sandstone blocks with mortared joints. The sandstone foundation walls are exposed to approximately 36 inches above grade. Below grade the foundation walls consist of an un-cut fieldstone with mortared joints. Footing material is unknown, but presumed to be either concrete or stone.

Existing Conditions

Due to their location below grade, footings could not be inspected. The sandstone foundation walls are in good general condition, and no cracking was observed either on the interior or exterior of the walls. This includes the southwest corner of the building where some settling has occurred. Mortar joints for the foundation appear to be in good condition. The sandstone blocks are showing some signs of erosion, likely due to freeze/thaw cycles, but their structural capacity appears to be sound. Below-grade fieldstone foundation walls appeared to be in good condition where observed from the interior.

Recommendations

Footings should be verified in order to determine if additional footings are deemed necessary as part of a structural/seismic upgrade to the structure. Steps should be taken to ensure that excessive moisture infiltration does not compromise the integrity of the sandstone foundation. The soil should be graded to slope away from the building. Foundation planting and irrigation should be limited to keep water away from the foundation walls. The downspout and gutter system should be repaired and directed appropriately to deflect water away from the foundation as it drains.

EXTERIOR WALLS

Historical Data/Description

Exterior walls consist of load-bearing unreinforced multi-wythe masonry. A wide lintel band of rough-faced sandstone above the second story openings terminates the brick wall. Above this is a stamped metal frieze directly below the eaves, which is accented with cast ornamental foliation above each of the projecting bays and at the corners. A wide band of rough-faced sandstone is also present at the lintel level of the first story openings underneath the front wrap-around porch.

Existing conditions

There are vertical cracks in the exterior brick walls at the southwest corner of the building and along the west wall. These cracks do not continue into the stone foundations. The cracks on the west wall are not the characteristic diagonal stair-step cracks one typically sees in unreinforced brick buildings where gradual settlement has occurred over time. A vertical crack is present on the lower east edge of the southeast bay windows on the second level.

The front wrap-around porch includes details such as Eastlake spindles and Romanesque columns,

The roof features wide eaves with simple modillions underneath the overhang

The black paint on the window sashes appears to be the original color, the lone use of dark color on the exterior details

Recommendations

The structural evaluation recommends that major cracks be injected with an epoxy prior to repointing. Specific recommendations in regard to seismic upgrade of the exterior walls are in the structural evaluation (Section Five). It is recommended that a shear test be conducted on the exterior walls.

BRICK AND STONE MASONRY, CAST CONCRETE, AND TRIM

Historical Data/Description

The exterior face brick is light pinkish-tan in color with a smooth finish. The mortar for the brick is colored with a darker reddish-brown pigment. The mortar is finished with a struck joint, with the bottom edge recessed. The brickwork is set off by the light color of the sandstone and cast concrete, as well as the light paint color utilized on the wood eaves and window trim. The black paint utilized on the wood window sashes appears to have been the lone use of a dark contrasting color. Rough-faced sandstone was used for the lintels and for much of the porch, including the squared columns and the support arches. Smooth sandstone was originally used for the window sills, decorative plaques, front steps, decorative side walls of the porch, and the porch railing and balusters. Deterioration caused by moisture has led to the replacement of some of the porch features.

Existing Conditions

The exterior face brick is in overall good condition, with little physical deterioration in general. The brick surface has never been painted and largely retains its original protective coating from the firing process. The masonry has some thin surface pollution and coal dust. Although it is unknown if the masonry has ever been cleaned, the wall surfaces do not show evidence of inappropriate or harsh cleaning approaches, such as high-pressure washes or sandblasting, that were some-

times used on historic brick exteriors. Some staining of the brick exists, which is mainly attributed to water damage or to chemical reactions from the attachment of metal elements, historical as well as recent in nature. Staining on the edges of the bricks are related to the use of the struck joint to finish the mortar. The struck joint provides a clean finish line, but is a poor insulator against water, as it allows water to collect on the bottom ledge. The deteriorating sandstone elements of the front porch (railing, balusters, front steps, suport arches) have either been retooled, replaced with like materials, or in the case of the porch railing, been replaced with cast concrete.

Recommendations

Any cracked mortar joints should be repointed with a mortar compound that matches the original in strength, composition, texture, and color. Any cracked or deteriorated bricks should be repaired and or replaced with like units. At a minimum, a simple low-pressure brick wash is warranted, and a full cleaning utilizing a mild acid wash followed with a low-pressure rinse is recommended. Sources of moisture that may further deteriorate any of the sandstone elements should be rectified, including the reconnection of the original gutter and downspout system and the removal of any window cooler units. All wood trim should be scraped and repainted. It is recommended that a full chemical paint analysis be conducted to correctly identify and match the historic colors for the wood trim and window and door assemblies.

EXTERIOR DOORS AND WINDOWS

Historical Data/Description

Original exterior doors were stile and rail wood panel doors in a wood frame, with upper glass panels and decorative hardware. Transom windows were located above each of the doors.

Windows are mainly wood, double-hung sash windows. Two windows on the second level are full length single-unit windows that open to allow access to the roof of the porch, which functioned as a balcony. The smaller windows in the rear ell are double-hung, but have divided lights on the upper sash, similar to those in the carriage house. The small windows in the attic-level dormers originally had a decorative diamond-shaped muntin on the upper section.

Existing Conditions

The original exterior door on the northwest corner of the parlor was removed and the transom boarded over. The original exterior doorway on the east of the building retains its transom and is now the inner door of the east vestibule. The front double doors are original and retain their original hardware, which includes decorative door handle plates, mail slot, and decorative metal corner plates that extend from the hinges. The balcony access windows are both in working condition. The windows on the east wall of the rear ell are intact, but have been covered over on the interior. The windows in the attic level dormers have been replaced with aluminum units.

Recommendations

At a minimum, the window units can be tightened with caulking and weather stripping. For a full restoration approach, each of the windows should be re-worked and any missing curved and/or leaded glass matched to the existing pattern in the southeast bay. The installation of a low-e glass should be considered, or the use of interior storm windows to provide a more energy-efficient window system.

ROOFING, DORMERS, AND TRIM

Historical Data/Description

The low-hipped roof with wide eaves, characteristic of the Italianate style, is not typically seen on Victorian architecture in Utah. Modillions with notched ends

decorate the wide eaves, which follow the contours and curves of the various bays. Hip-roofed dormers located on the front (south) and west sides are sided in wood shingles with simple modillions used on the eaves.

Existing Conditions

The roof has several layers of shingles, including the original layer of machine-sawn cedar shingles, and currently is covered in an asphalt shingle. The wood eaves and decorative modillions are in generally good condition, with some areas of deterioration.

Recommendations

New sheathing for the roof is recommended as a component of the structural upgrade, which will tie the roof to the walls. If a preservation/stabilization approach is used for the building, then a re-roofing with architectural asphalt shingles may be acceptable. For a full restoration approach, machine-sawn cedar shingles are recommended.

CARRIAGE HOUSE

The exterior of the carriage house was done in a similar style to the mansion. The exterior brick, however, is not in as good of condition as that of the mansion. The brick has suffered more deterioration and mortar failure, which has allowed water to penetrate into the wall cavities. The water table around the foundation of the building is also showing signs of weather damage, especially where concrete paving sits adjacent to the exterior walls. The exterior windows are of a different style than the mansion, and are double-hung windows with divided lights. Sandstone was used for the sills and lintels in the same manner as the mansion. Additional exterior trim includes the metal rosette details on the top beam of the entrance. The roof, which appears to be one layer of asphalt shingle on top of the original cedar shingles, is in serious disrepair. Holes in the roof have allowed water to penetrate as well as provided access for animals and birds to roost in the interior.

The rear of the mansion has undergone several modifications, including the rear third story addition (c. 1940) and the extended rear porches (c. 1993)

Exterior of the carriage house, 1893

SECTION FOUR: FLOOR PLANS & FRAMING PLANS

FLOOR PLANS

The as-built drawings done by the University of Utah Students have been updated and modified following additional site visits by the consultant team. Included are floor plans for each level of the mansion: basement, main level, second level, and attic level. Included on the floor plans are room numbers for each defined space on each level of the mansion. These are used to clarify the identification of rooms in the narrative portions of this report. Additionally, as-built drawings have been constructed of the carriage house main and second levels.

FRAMING PLANS

On-site investigations by the consultant team provided information to create structural framing plans of the mansion and carriage house. These will be used by the Structural Engineers Association of Utah (SEAU), which is providing a pro bono evaluation of the buildings and recommending approachs for suitable upgrades.

FLOOR TYPES

In addition to determining the framing of the buildings, investigations have revealed the layers of flooring present in most rooms of the mansion. A sheet identifying the various current floor types in included in this section. The flooring types are identified on the framing plans.

SECTION FIVE: INTERIORS

A. ORIGINAL INTERIOR AND INTERIOR COMPONENTS

1. Historical Data/Description

Basement:

Much of the basement is semi-finished space, with the southwest portion being a crawl space and uninhabitable. In some rooms ceiling heights are extremely low. For example, in Room 003 the ceiling height is approximately 6'-0". In many rooms the ceiling is finished with lath and plaster rather than exposed joists, indicating that it was an actively used area of the mansion, likely serving as both support space and living quarters for domestic staff. A double-door opening historically connected Rooms 002 and 003; this has since been reduced to a single-door opening.

Main Level:

This level consists primarily of the formal spaces of the mansion. The southern two-thirds of this level contains an entrance vestibule (Room 100), foyer (Room 103), and main staircase that are located in the center, a parlor (Room 102) on the west side, and a library (Room 104) and formal dining room (Room 105) on the east side. The north one-third of this level is comprised of secondary areas, including a bathroom (Room 110), hallway (Room 106), rear staircase, and kitchen (Room 109). Historically Room 108 functioned as a butler's pantry and there are indications that it was accessed through a doorway from Room 109 and not the hallway. A porch on the east and a porch on the west have both been enclosed and expanded.

Second Level:

The south side of this floor is made up of bedrooms (201-207) that surround the central grand staircase. The north end houses the rear staircase and domestic staff quarters (211-212). Rooms 211 and 212 are separated from the family section by a pocket door for privacy (209).

It is speculated that the domestic staff space was originally laid out to consist of a bedroom and sitting room/bathroom. The north end of the current restroom (211) would have been the staff sitting room/bathroom while the south end (210) was the family bathroom, as this room was accessed from the family's side of the pocket door.

Main level parlor, looking south to rounded bay windows

Double wood arch detail accenuating the entrance to the master bedroom suite

Single arch detail in the south bedroom

Two tall windows open fully for step through access onto the balcony (213) above the front porch. One is located in the room 205 and the other in room 207. The access window in 205 is tucked into a small side area of the room separated by an arched doorway. Currently there are plumbing attachments and a recessed wall cabinet in this area. A basin may have existed originally, but was more likely added later. This space may have simply been the access to the porch and was tucked out of the way of the rest of the room.

Third Level:

This level was originally composed of the large attic space, stairway, and cistern space (300 - 302). It is unclear what the interior arrangement of Room 301 was originally, given the absence of existing walls and later alterations. The staircase continues up from the second floor and enjoys the same level of detail as the first and second floors. Given this level of detail and that the stairwell was accessed from the family's side of the pocket door, it is possible that the original funtion for the room was as a day nursery for the children. It was common for wealthy European homes to use the room(s) at the top of the house for the care of children, and the term nursery was used to describe space devoted to the care of children of all ages, not just infants. There may have been intentions to finish off the space that never materialized before the room was no longer needed in this capacity.

Room 301 has numerous extant wood structural posts inset from the exterior walls by approximately ten feet that support the roof structure. Each of these has an irregular wood base plate. These posts bear little or no continuous relationship with the structural bearing walls of the floor below. The inside brick face of the exterior masonry wall is visible above the floor, extending up about 36 inches.

At the north end of the room a glazed panel above the original stairwell is still intact. The embellished glazed metal frame modulating the light from the more pro-

saic skylight in the roof structure above is still intact. A decorative railing was originally located around the entire perimeter of the metal frame. The skylight allowed natural light to the interior of the home. The decorative glazed metal frame filtered the sunlight and added visual interest to the grand staircase below. The south wall of the stairwell was also open to the attic room, separated by the decorative railing around the skylight.

Room 302 originally and currently houses a large cast iron cistern which ostensibly collected rainwater from the roof for distribution to an early indoor plumbing system.

A view of the open plan third level

The wood posts that support the roof structure

Wood beadboard paneling walls and ceiling in the rear third story room

2. Existing Conditions

Basement:

The basement area continues to serve as support space for the building's mechanical, plumbing, and electrical systems, as well as storage space for the functional floors above. The walls in Room 002, located to the south as the bottom of the stairs, have been furred out, indicating that it was an actively used living space of some degree while the mansion served as a group home. The original floor plan is largely intact, with the addition of walls to create Room 005 within the space of Room 006, as well as to enclose space on the north side of the basement, to create Room 009. A newer room (Room 010) was added on the northwest corner that provides egress via a newer set of concrete stairs on the west wall.

Main Level:

The original layout of the formal areas is intact while modifications have been made to the secondary areas in the rear of the building. At the front of the house, the library (Room 104) had been split into two rooms with the addition of a wall running east-west. This wall was removed by the city's property management department prior to the first public open houses held in 2008. Historically a butler's pantry, Room 108 currently func-

tions as a multi-stall bathroom. Indications from the styling of the door frame, wood paneling, and exterior indicate that the hallway access to the room was added while the home still functioned as a residence for the Fisher family. Room 107 functions as an enclosed entry vestibule, which was comprised from a portion of the east porch. To the north of this vestibule is Room 112 that likely served as a bedroom for the group home. The remainder of the east porch is contained in this room, which was expanded to the east. The smaller west porch was expanded to the west and around the bathroom (Room 110), making it flush with the west wall of the mansion, to create a room (Room 111) that functions as an extension of the kitchen.

Second Level:

The original floor plan is largely intact. Modifications to room 202 divided the space into two rooms; these dividing walls have since been removed. The once open grand staircase was enclosed to accommodate fire code when the building was a home for men, but has since been opened up part way. Rooms 210 and 211 are now a restroom with toilets and showers.

The balcony no longer serves its original purpose. The space only acts as the roof for the porch. The railing has been removed and asphalt roofing materials are now in place. The waterproofing along the perimeter is not water tight.

The cubby area in 207 is missing the sink that once existed and the plumbing has been left exposed. A medicine cabinet and shelves remain as well. A vertical pipe that accompanies the fire suppression system has been punched through the floor and ceiling in area 209.

Electrical fixtures, such as outlets and heaters, and conduit have been added to the base of some walls.

Third Level:

The short railing around the perimeter of the metal frame in Room 301 has since been removed. The outline of this original component is still visible at the wall. Structural eave rafters are keyed into the exterior masonry, visible and flush on the interior surface. In some cases these extend through the wall connecting to a diagonal kicker tied into the roof structure. The roof rafters bear on sill plates on the exterior masonry walls connecting to the eave structure below. The two central columns on the south side are flanked by a larger square column, wrapped in gypsum board. These may have been a later addition since they lack the wood base plate typical of other columns in the space. They may have been a necessary upgrade to support the dormer window on the south side.

The decorative skylight frame shows signs of serious corrosion due to sustained water damage. There are numerous panels missing or broken in the frame.

The cistern drain lines in and out are no longer extant in 302.

Room 303 is ostensibly a later addition over a 1 ½ story structure below. An original gable attic was replaced with this slightly larger room. There is an 8" elevation difference between the hallway (300) and the flooring of this room.

3. Recommendations

Preservation Recommendation:

Second Level:

Completely remove recent wall additions around the grand staircase and reinstall the railing. Consider removing restroom floor (210-11), depending on intended use, to reveal original floor treatment.

Repair balcony weatherproofing to prevent further water damage.

Install a basin in the cubby of 207 that maintains the character of the house or remove the exposed plumbing.

Third Level:

Evaluate stability of roof structure and make necessary

improvements. Check windows for weatherproofing and make necessary repairs. Install short railing around skylight and repair and install missing or damaged panels to decorative skylight frame. Check sloped skylight for weathertightness and make necessary repairs.

Restoration Recommendation:

Remove all recent wall additions that enclose both sets of staircases. Further investigate original uses and materials of current restroom (210-11). The restoration of this room will depend on the future use of this space but considerations should be given to restore it to the character of the second floor.

Restore the balcony to its original character based on historic photographs. This includes removing layers of roofing materials, restoring balcony flooring that is compatible with the home's character, and installing new railing using historic photographs for reference.

Remove the exposed plumbing, shelves, and medicine cabinet in the cubby of 207.

Recess the large vertical pipe in area 209 if possible.

Remove or recess electrical components into the wall so the boxes and conduit are not visible.

Third Level:

Upgrade addition (303) to fit the character of the rest of the home. Replace windows in 303 and 301 that are more in keeping with the character of the home. Install short railing around skylight and repair and install missing or damaged panels to decorative skylight frame. Check sloped skylight for weathertightness and make necessary repairs. Remove gypsum panel ceiling in 301 to reveal original exposed roof structure for clues to original room layout.

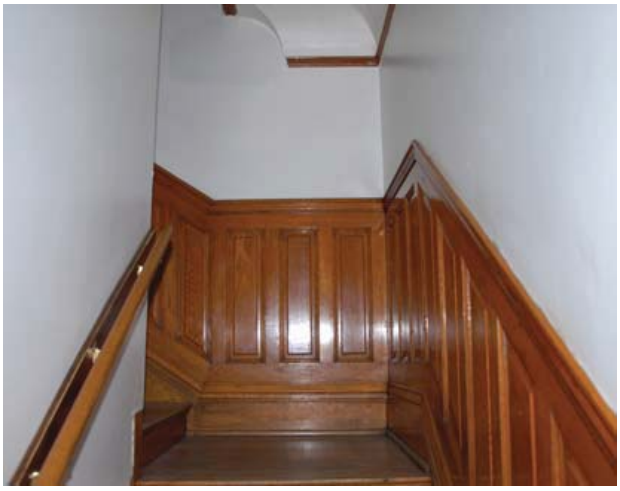
B. HORIZONTAL AND VERTICAL CIRCULATION

1. Historical Data/Description

The main foyer (101 & 103) provides direct access to each of the three formal rooms on the main level

Folding wood and glass doors separate the library and dining rooms on the main level

The grand staircase was enclosed for fire code reasons when the mansion was a group home



Wood paneled wainscot of the grand staircase

through single and double doorways. It also led to the main grand staircase up to the second level. The rear hallway (106) provided access to the secondary areas and the rear staircase to the second level as well as access to the basement stairs. A decorative skylight above this staircase supplied natural light to the core of the house. Circulation existed between the library and dining room when folding pocket doors were opened. A door off the northwest corner of the parlor originally led to the exterior of the house. A door off the north side of the dining room provided access to and from the secondary/kitchen areas in the rear of the house. A doorway at the rear of the foyer led to the rear hallway where the bathroom, kitchen, basement, and rear staircase could be accessed. A door off the east end of the hallway was the side entrance from the east porch. A door off the west wall of the kitchen provided circulation to the small west porch.

On the second level a hallway around the grand staircase (200) provides access to each bedroom as well as the original bathroom (210) and the rear staircase that leads up to the third floor. A pocket door separated this hallway from a small rear hallway, which provides access to the staff's quarters and the rear staircase down to the secondary areas on the main level.

A rear service staircase off the rear hallway (209) provides access from the first floor to the second and third floors. Access from the first to second floor is gained from the north (staff) side of the pocket door while the third floor can be reached from the south (family) side of the pocket door. Both sets of stairs were originally finished with oak, as typical through most of the home.

2. Existing Conditions

All of the original circulation is extant on the main level of the building. Additional circulation was added between the kitchen and parlor when the west porch was expanded and enclosed. The east entrance is now accessed through a vestibule that is part of the former east porch. The grand staircase was enclosed as a

The rear staircase leading down to the main level from the domestic staff area of the second level

View down the main staircase from the second level

method for meeting fire code requirements during the building's use as a men's group home. The rear staircase has also had some enclosures for fire code as well separating the third floor space from the stairwell. Stair treads and other wood trim has maintained its original use and character but is scratched and scuffed. One banister on the rear staircase has been removed but is lying on the floor in the small gap between the stairs and the wall. An alarmed emergency fire exit and stair system now exists from Room 301.

3. Recommendations

Preservation Recommendations:

Completely remove the walls that enclose the grand staircase. Replace with a historically appropriate handrail that meets current code requirements for height. Some of the balusters from the original handrail are being stored in the carriage house and can be used as a template for the new handrail. Wood treads on both staircases will need to be cleaned and repaired. Clean and repair all other woodwork.

The sink fixture and tile floor of the main level bathroom are presumed to be original to the house

Restoration Recommendations:

Completely remove the walls that enclose the grand staircase. Replace with a historically appropriate handrail that meets current code requirements for height. Some of the balusters from the original handrail are being stored in the carriage house and can be used as a template for the new handrail. The walls and door frames enclosing the rear staircase should also be removed. Wood treads on both staircases will need to be cleaned, repaired, sanded, and finished. Clean and repair all other woodwork. Remove emergency fire exit and stair system. Patch exit door access with appropriate brick.

C. FLOOR FINISHES

1. Historical Data/Description

Based on investigative demolition, the conjectural base flooring layers include a diagonal 1" x 8" oak subflooring and an additional subfloor consisting of 1" x 4" fir planks throughout the house, with the exception of the main level bathroom and entrance vestibule, speculated to consist of only the 1"x 8" oak subfloor. The subfloor layers are supported by 2" x 12" floor joists on the main and second levels and by 2" x 8" floor joists on the third level. The original finish flooring on the main and second levels is 3/8 X 2 ¼ oak veneer, with the exception of the main level bathroom and entrance vestibule, which were finished ceramic tiles in decorative patterns. The third floor is presumed to have not had a finish floor on top of the fir subfloor. The basement flooring is an unfinished concrete slab.

2. Existing Conditions

The majority of the flooring throughout the house has undergone a variety of alterations from the original

finishes. On the main level the most significant flooring alteration is in the parlor, where ½" quarry tile is set in a mortar bed atop a masonite board backing. Investigated demolition indicated that these layers are atop the original floor finishes, including the oak veneer. The other formal areas on the main level, foyer, library, and dining room, were covered with linoleum atop a ¼" masonite board. An additional layer of carpet also existed on top of the linoleum. In these three rooms, the additional layers have since been removed by the city's property management team. The original tile is extant in both the entrance vestibule and the main level bathroom. On the second level, the original wood oak flooring is extant in the bedrooms. A layer of carpet was installed on top of the wood flooring in Room 202, but was removed at the same time as the carpet on the main floor. The wood is in fair condition with scratches and scuffs throughout.

The second floor restroom has a raised floor and is covered in linoleum. The original purpose of this space is likely as a family bathroom in the south end of the space and a sitting room and/or servant restroom accessed via the servant's room on the north end where the showers are located. The original finish flooring may still exist beneath the raised floor, but this has not yet been determined. It is likely that the family bathroom portion of this room was finished in a tile similar to the main level bathroom. The rear portion of the room would likely have been the same oak flooring that exists in the other rooms or tile, depending on its use.

On the third floor, the small hallway (300) wood floor is currently covered with carpet. Room 301 is also carpet over a 1/2" linoleum tile and ¼" masonite overlay. The original wood flooring is under this.

The addition (303) is currently covered in carpet. The conjectural flooring layers based on investigative demolition include a diagonal 1" x 8" oak subflooring over 2" x 8" floor joists. An additional subfloor was installed consisting of 1" x 4" fir planks. Evidence shows further alterations to include a ¼" masonite overlay, a 1/2"

View of the south central bedroom, which may have served as a boudoir or ladies drawing room

Floor treatment in a bedroom closet

The dining room, looking north to the fireplace and doorway to the kitchen area

View of the parlor, looking to the north. The coved ceiling is an original feature of the main floor rooms

View of the original kitchen area, which was remodeled to accommodate more intense group uses of the home

linoleum tile and finally the current flooring consisting of carpet pad and sheet carpet.

3. Recommendations

Preservation Recommendation:

Remove carpet and linoleum as appropriate to reveal original floor treatment. Clean and repair all wood floors. Consider removing restroom floor (210-11), depending on intended use, to reveal original floor treatment.

Restoration Recommendation:

Remove carpet in room 202. Clean, repair, sand, and finish all floors. Due to the oak veneer flooring thickness, there is very little wood available for sanding and refinishing. Evaluate the feasibility of sanding the floors. It may need to be replaced.

Remove recent layers of linoleum/vinyl material in the closets and clean, repair, sand and finish original wood flooring. Remove restroom floor to reveal original floor treatment. Regardless of future use, flooring should be replaced with materials more in keeping with the character of the rest of the second floor.

D. INTERIOR PARTITIONS AND WALL FINISHES

1. Historical Data/Description

On the basement level the interior wall partitions consist mainly of the stone foundation walls or exposed brick walls. These walls were not generally finished with a plaster covering, although some walls have been painted and this may have been the historical finish. On the upper levels the interior wall partitions are approximately six inches thick and composed of 2 X 4 framing covered with lath and plaster. The wall finishes in the vestibule, foyer, library, and dining rooms consist of a wood wainscoting of decorative panels with embossed wallpaper over a smooth skim coat of plaster above. The parlor may have originally had the

same wainscoting and embossed wallpaper combination or a different wall finish. The north hall (106) and passageway/under-stair area (111) wall finishes are the same combination of wood wainscoting and embossed paper, but the wainscoting is a more simple design of three-inch wood planks. The main level bathroom (110) was a painted plaster. The original kitchen is also presumed to have originally been painted plaster.

On the second level the wall finishes were comprised of a smooth skim coat of plaster and a light paper. Historically this may have been decorative wallpaper or merely provided a smoother surface on which to paint. There remains a portion of embossed wallpaper in the hallway near the rear service stair, which has since been painted over. The embossed wallpaper may have been the original finish for portions of the second level.

The wall finishes of the hallway (300) in the attic level are painted lath and plaster. The wall treatment in the large attic room (301) is exposed brick, suggesting that this room served simply as a utilitarian space. The original mechanical room containing the cistern (302) did not have finished walls and the wood studs remained exposed. The original plaster in the stair and hallway area is still intact and in good condition. The brick in Room 301 is in good condition as well. The north room, a later addition to this level, likely retains its original wall finishes, which are stained beadboard planking over wood stud framing.

2. Existing Conditions

The original plaster is still intact and in good condition. The walls are currently painted. The original wood trim still exists and is in fair condition with some scratches. The baseboards are in fair condition as well but do have areas that are heavily scuffed. Areas of concern are room 208 and the baseboard of the cubby area in room 205 where there appears to be water damage.

Closets have a variety of wall treatments. Some have wallpaper and others are painted. The original treatment is unknown.The staircase is partilly enclosed with 2 X 4's and drywall. Original banisters and railing have been removed.

3. Recommendations

Preservation Recommendation:

Patch and repair cracks, holes and inconsistencies in the plaster where they may exist. Remove damaged wallpaper in closets to the next stable layer. Clean and repair damaged wood trim areas. Remove more recent wall additions around the grand staircase.

Restoration Recommendation:

Further exploration can be done to more fully understand original wall treatments. Patch and repair cracks, holes and inconsistencies in plaster where they may exist. Remove paint from wood trim in closets where this occurs. Remove damaged wallpaper in closets. Clean, repair, sand, and finish damaged wood trim. Replace missing wood trim areas with the same type of wood, design, and finish. Remove more recent wall additions around the grand and rear staircases. For the third floor, clean brick, secure loose and replace missing bricks. Remove emergency exit door and stair system and replace with brick.

E. CEILING FINISHES

1. Historical Data/Description

The ceiling finish in the majority of the basement is a painted lath and plaster. The presence of the finished treatment rather than exposed joists indicates that it was an actively used area of the mansion, likely for support space and living quarters for domestic staff. The ceiling of Room 001, located under the original east porch, is beadboard planking. The ceiling of the unfinished crawl space (004) is exposed wood joists. The treatment of the ceilings on the main and second levels appears to be similar to the walls. There is a smooth skim coat of plaster upon which a light paper has been placed. Original finishes may have been the

A fire sprinkling system was installed in the 1990's while the mansion was a group home

The decorative skylight above the main staircase had been covered over but remains mostly intact

Curved, decorative leaded glass was used in the transoms of all the bay windows; it only remains in the southeast bay

paper or a painted finish. The attic level has a painted lath and plaster ceiling in the hallway. The main room is surmised to have had exposed rafters originally, as well as the wire glass skylight in a metal frame that is in plane with the slope of the roof. The mechanical room (302) ceiling was exposed rafters. The ceiling of the later addition (303) is the same stained beadboard planking that is the wall finish.

2. Existing Conditions

Ceilings appear to be the original lath and plaster and are currently painted. The original treatment is unknown. There is a large area in the east bedroom that has been patched. Light fixtures are of various styles but mostly modern in appearance. The light fixture in 207 may be original and reflects the character of the house. A fire suppression system exists throughout the main and second floors and is suspended just below the ceiling. Currently, the ceiling in Room 301 is gypsum panels to fire rate the roof assembly on the underside of the roof joists. The skylight appears to be water tight although there is ample evidence of past disrepair.

3. Recommendations

Preservation Recommendation:

Patch and repair cracks and holes where they may exist. Repair cracks and leaks in skylight and clean glass.

Restoration Recommendation:

Patch and repair cracks, holes and inconsistencies where they may exist. Replace light fixtures with fixtures more compatible to the character of the home. The light fixture in 207 may be original and reflects the character of the house. It could be used as an example for the appearance of the other light fixtures. Recess the fire suppression system into the ceiling. Remove the gypsum panels in Room 301 to expose the original ceiling. Repair cracks and leaks in skylight and clean

glass. Patch possible cracks and leaks in Room 302.

F. DOORS AND WINDOWS

1. Historical Data/Description

Interior Doors:

The majority of the original interior doors were stile and rail wood panel doors with decorative hardware. On the main level, a set of double stile and rail wood doors with glass panels separate the entrance vestibule from the foyer and another set leads from the foyer into the north end of the parlor. A double set of stile and rail bi-fold doors with glass panels separates the library and dining room. A glass panel transom is above the sets of double doors. None of the other interior doors on the main level have transoms above. The hardware for the doors leading into the parlor are more elaborate on the parlor side than the remainder of the door hardware on this level. In general, the hardware for the doors is more elaborate in the formal spaces and family bedrooms than in the secondary and domestic staff areas. On the second level each door has an operable transom above it, including the closet doors. These were easily opened with special hardware on the door frame. Transoms were helpful in circulating air and keeping the home cool during hot summer months. On the attic level a stile and rail wood panel door would have likely been present as the door to the main attic space (301) and the later addition (302). The cistern room was accessed via a pair of glazed panel doors, which ostensibly permitted the display of the innovative plumbing system. It is unclear whether or not this was the original location of these cabinet-style doors.

Windows:

Unique to this home are the access windows/doors to the balcony area (213). These windows raise vertically high enough for a person to step through easily and are located in both the south and east bedrooms.

View of the door style used on the main level's single doors

View of the double bi-fold doors separating the library and dining room

View of the southeast bay transoms on the second level; the original curved glass has been replaced with a flat glass

View of the decorative skylight panel from above; some of the panels have been damaged or are missing

Decorative wood doors accent the entrance to the cistern room at the top of the stairs to the third level

Windows located in the curved bays had curved glass as well (102, 104, 202 and 206). Transoms above were a fixed leaded art glass and also curved. The bay window in room 207 also had fixed art glass in the transoms. All other windows on this level had a fixed transom with flat glass above except for rooms 209 through 212.

2. Existing Conditions

The formal areas on the main floor retain their original doors and intact hardware. The south door into the parlor (Room 102) has been flipped to accommodate a change in the direction of the door's swing. The hardware and stain on the door still reflect the original orientation of the door. Some of the original closet doors remain on the second level. Other doors have been replaced with wood hollow core doors. The pocket door in 209 is missing its original hardware. Most transom hardware is still in place and in good condition. Some transom glass has been covered for privacy.

With the exception of Room 104, all the decorative art glass transoms have been replaced with flat glass. The curved glass in the bays remains except for the transoms. Small shelves have been added between the transom and window in room 206 and 207.

Overall, wood trim appears to be in good condition with some scratches and dents. There are some areas where small sections of the frame are missing or need to be reattached. This is the case for the door frames for rooms 202b and 206a.

The window on the west side of Room 301 was modified at some point to accommodate emergency egress outside to an exterior fire stair. The south windows were replaced with aluminum frame windows. Windows in the addition (303) are aluminum frame.

The door to the hall (Rm. 300) is a modern hollow metal hinged door while the door to Room 303 is a modern hollow wood hinged door. The decorative cabinetry doors leading into 302 are loose.

3. Recommendations

Preservation Recommendation:

Clean and repair any damaged windows, frames, and hardware. Check for weathertightness and make appropriate repairs.

Clean and repair transoms. Remove coverings from the glass.

Repair damaged wood areas. Replace missing wood trim areas with the same type of wood and design. Restore missing hardware that maintains the character of the house in the area 209 pocket door.

Paint the metal door going into 301. Repair and secure the glazed panel door cabinetry going into 302.

Restoration Recommendation:

Replace doors and hardware with originals, if they exist, or replicas after the manner of the remaining original closet doors. Replace missing transom hardware as well. Remove covering on transom glass above doors.

Replace existing flat glass in bay transoms (102, 202, 206, and 207) with decorative art glass based on historic photographs. Curved glass could be used in its place if art glass is not an option. Remove the small shelves between the transoms and the windows.

Clean, repair, sand, and finish damaged wood trim areas. Replace missing wood trim areas with the same type of wood, design, and finish.

Replace aluminum frame windows on the third level with those more in keeping with the character of the house. Clean, repair, sand, and finish damaged wood on the glazed panel door cabinetry going into 302. Restore hardware and secure the entire cabinet.

G. TRIM, MANTLES & FIREPLACES

1. Historical Data/Description

A wood paneled wainscot was utilized in most of the formal spaces on the main level, the grand staircase,

A view of the curved bay in the southwest bedroom

A view of the northwest bedroom; external conduit has been applied on top of the baseboard

and second level hallway. It consisted of a repeating pattern of panels. In the library the pattern is more detailed, while the rest of the formal areas repeat a vertical beveled rectangle panel. A simple wood plank wainscot was used for the rear, secondary spaces. The wainscot is topped with a chair rail and anchored with a wide wood baseboard with decorative cap. The main floor rooms also have a picture rail, located approximately one foot from the ceiling. Two fireplaces are extant on the main floor, in the dining room (Room 105) and the parlor (Room 102). The two other chimneys, located on the east wall of the library (Room 104) and the north wall of the kitchen (Room 109) are presumed to have been for stove pipes, rather than fireplaces. The wood floor in the library does not indicate evidence of a prior hearth, but the paneling on the east wall in the location of the chimney appears to have been modified. It is presumed that a decorative wood stove was located on this wall with a metal panel covering the wall behind. The wood paneling may have been patched to match as best as possible to the rest of the room's wainscot. As the home was designed with a central heating system, the fireplaces would have been more decorative in nature than functional conveyances of heat. There is no evidence that fireplaces were installed on the second or third floors.

2. Existing Conditions

The wood trim is in fair to good condition. The paneling in the library (Room 104) has become quite dry and brittle in some areas. In many of the rooms, adhesive remains on the baseboard from a later application of base material, such as a rubber base. Much of the wood is moderately scuffed and has the general wear associated with over 100 years of use. Tile around the fireplaces are in good condition.

3. Recommendations

Clean, repair, sand, and finish damaged wood trim areas. Replace missing wood trim areas with the same type of wood, design, and finish. Check fireplace surrounds for any loose tile and re-grout if necessary. Fireplaces should be inspected and may need repair if they are intended for active use.

CARRIAGE HOUSE

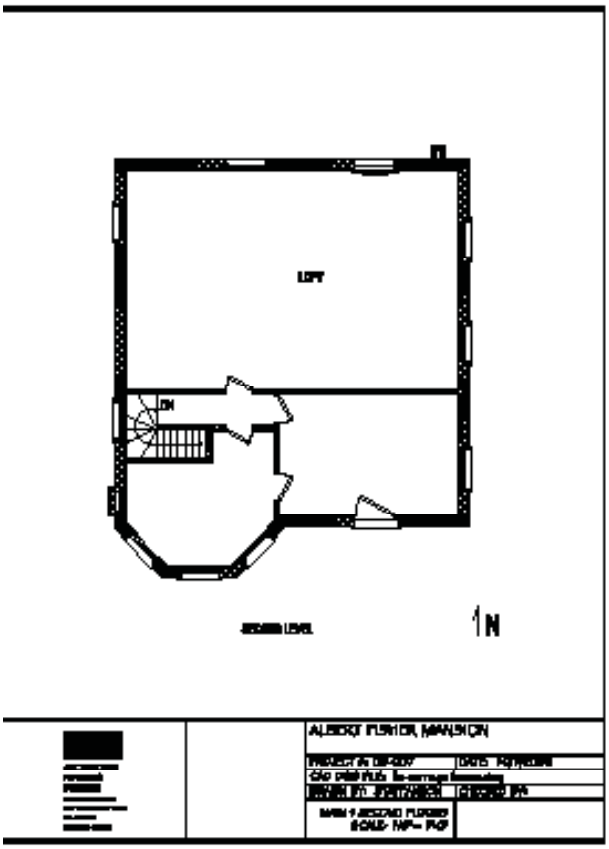
A. ORIGINAL INTERIOR AND INTERIOR COMPONENTS

1. Historical Data/Description

Main Level

The large carriage room was accessed by two large double doors that swung out under the recessed entry. Two sliding doors opened directly into the stable area from the carriage room. A chimney to the north may have provided venting for a small wood stove.

The stable room is lined with several windows on the



west side. A large door to the north opened for access to the rear of the carriage house.

The small room to the south was a tack room and has a bay that matches the house. A chimney to the west of this room suggests a stove may have existed in this room at one time. A narrow staircase leads up to the second level and is located between the stable and tack room. Another door opens from the exterior to the bottom of the stairs.

Second Level

The loft makes up a majority of this floor on the north end. A few large windows permit light into the space. A door on the north side provides access to the loft from the outside.

The south end holds two smaller living spaces that each have their own access door from the hallway and share a door between them. A large loft door opens into the east room. It may have been the only way to get furniture into this space, due to the limitations of the narrow staircase. The west room follows the bay footprint from the tack room below. It may have also had a stove that connected with the chimney to the west of the space. These rooms might have been housing for a servant at one time.

2. Existing Conditions

Main Level

The carriage room remains largely intact including door mechanisms. The sliding doors are still in place. The large double doors have been replaced with a single overhead door. An extra room has been added to the stable room. The tack room has been modified from the 1968 HABS drawings. A wall now covers the closet and restroom. The state of these covered spaces is unknown.

Historic photo of the carriage house; access was originally on the west side of the property

The chimney on the carriage house was topped with an arched cap

The roof style of wide eaves and simple modillions was used on the carriage house as well as the mansion

The stairway in the carriage house is in poor condition, with some broken treads

The main hayloft area of the carriage house

The southeast room on the second level of the carriage house ; moisture has caused plaster damage to the walls and ceiling

Second Level

This level maintains its original layout. The living spaces are in poor condition with cracked and falling plaster. The loft structure appears to be in good condition.

3. Recommendations

As there is less architectural detail on the interior of the carriage house, defining elements should be preserved and or restored. Double doors that match the original are recommended for the main carriage house door. Windows should be repaired and/or replaced with like versions that are more energy efficient. The layout of the second floor space is significant for its display of the building's structural framing; maintainig these structural elements is recommended, even if they no longer carry the load of the building and its roof.

B. HORIZONTAL AND VERTICAL CIRCULATION

1. Historical Data/Existing Conditions

A door provides direct access to the tack room, stable, and stairs. A narrow staircase leads to the second floor. A small hallway on the second floor serves the loft and two small rooms. The stairway is in disrepair. Treads have been broken and had patchwork repairs.

2. Recommendations

The stairway will need to be shored up with additional support, especially if the use of the carriage house is of a higher intensity.

C. FLOOR FINISHES

1. Historical Data/Existing Conditions

The main level floors are concrete while the second level floors are made up of wood flooring. The condition of the wood flooring is marginal and may not be salvagable.

2. Recommendations

The floor finishes will be affected by the structural upgrade process. If possible, salvage some of the wood flooring or replace with like.

D. INTERIOR WALL FINISHES

1. Historical Data/Existing Conditions

Utilitarian areas have walls with exposed brick while living areas have lath and plaster. Moisture infiltration and lack of maintenance on the building have deteriorated the plaster finishes.

2. Recommendations

The exposed brick should be retained, if possible, depending on the use. The walls will require re-plastering with a compatible material.

E. CEILING FINISHES

1. Historical Data/Existing Conditions

The ceiling in the living spaces is composed of lath and plaster. The stable and carriage room ceiling is exposed subfloor and beams. Both have been stained the same color and are in good condition. Some beams over the north sliding door to the stable have been cut back. The resulting beams have been tied to a new header. There is significant damage to the second floor ceilings in the living spaces.

2. Recommendations

The exposed subfloor and beams should be retained as the ceiling finish, if possible, depending on use. The ceilings will require re-plastering with a compatible material.

SECTION SIX: LIFE SAFETY & ACCESSIBILITY

The following code analysis evaluates the performance of the Albert Fisher Mansion in terms of fire safety, means of egress, general safety, and accessibility.

Some of the primary Life Safety deficiencies include an outdated building-wide fire alarm system, non-compliant egress stairs from the upper levels of the building, and potential deficiencies in the fire rating of the interior bearing walls.

Some of the primary accessibility deficiencies are the lack of emergency egress options from the upper floors, lack of an elevator to access upper floors, problematic clear space for wheelchair access to the majority of the rooms, non-compliant hardware on the majority of doors, non-compliant restrooms in the building, non-compliant or lack of adequate signage, non-compliant reach ranges for controls, switches, etc., and non-compliant or lack of drinking fountains.

HISTORIC CONSIDERATIONS

The Albert Fisher Mansion serves an important contributing role to the historic character of Salt Lake City. Therefore, care should be taken on how the minimum code recommendations are implemented. The local building official retains latitude with compliance to code in the context of historic structures. "The provisions of this code relating to the construction, repair, alterations, addition, restoration and movement of structure shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute a distinct life safety hazard." (IBC 2006, 3407.1) By working with the building official in all stages of design a solution may be reached that increases the building's safety while at the same time preserving the historic character of the architecture of the Fisher Mansion.

Some exceptions to the recommendations contained herein can be made by the building official to lessen the detrimental impact to its historic character. Major historically significant elements on the interior and exterior of the building are intact and a high degree of importance should be placed in preserving these spaces.

LIFE SAFETY ANALYSIS

Construction Type:

The Albert Fisher Mansion most likely will be categorized as Type V-A Construction. This type is defined as a, "Type of construction in which the structural elements, exterior walls and interior walls are of any materials permitted by this code." This construction type requires a fire resistance rating of 1 hour for the structural frame, the interior and exterior bearing walls, the floor construction and the roof construction and un-rated interior and exterior non-bearing walls. (See Table 601, 2007 IBC) It appears from floor plans and on site building analysis that the majority of the exterior load bearing walls are composed of un-reinforced brick masonry. There does not appear to be combustible material in the exterior walls except for the third level addition on the north side of the house. Further analysis reveals that both the load bearing and

non-load bearing interior walls are primarily wood framed stud walls with wood lath and plaster on both sides. This archaic wall assembly can typically satisfy the 1-hour fire rating required by code. However, the building code permits exemption from the 1-hour rating if an approved fire sprinkler system is installed throughout the building. It is important to understand that if the interior load bearing wall assemblies do not meet the 1-hour rating and an approved fire sprinkler system is installed, then the area and height increases described in the table below shall not apply.

Occupancy Classifications:

The following outlines potential primary occupancies for the Fisher Mansion. The primary occupancies are used to determine allowable areas of the building in conjunction with the Construction Type described above.

PRIMARY OCCUPANCIES

(A-2) Assembly uses intended for food and/or drink consumption including, but not limited to: Banquet halls, Night clubs, Restaurants, Taverns and bars.

(A-3) Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to: Amusement arcades, Art galleries, Bowling alleys, Places of religious, worship, Community halls, Courtrooms, Dance halls (not including food or drink consumption), Exhibition halls, Funeral parlors, Gymnasiums (without spectator seating), Indoor swimming pools (without spectator seating), Indoor tennis courts (without spectator seating), Lecture halls, Libraries, Museums, Waiting areas in transportation terminals, Pool and billiard parlors.

(R-1) Residential occupancies containing sleeping units where occupants are primarily transient in nature, in-

cluding: Boarding houses (transient), Hotels (transient), Motels (transient).

(R-2) Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including: Apartment houses, Boarding houses (not transient), Convents, Dormitories, Fraternities and sororities, Hotels (nontransient), Monasteries

Motels (nontransient), Vacation timeshare properties.

(E) Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade. Religious educational rooms and religious auditoriums, which are accessory to places of religious worship in accordance with Section 508.3.1 and have occupant loads of less than 100, shall be classified as A-3 occupancies.

(B) Business Group occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts.

(I-1) Institutional occupancies shall include buildings, structures or parts thereof housing more than 16 persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services. The occupants are capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following: Residential board and care facilities, Assisted living facilities, Halfway houses, Group homes, Congregate care facilities, Social rehabilitation facilities, Alcohol and drug centers, Convalescent facilities.

(M) Mercantile Group M occupancy includes, among others, buildings and structures or a portion thereof, for the display and sale of merchandise, and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following: Department stores, Drug stores, Markets, Motor Fuel-dispensing facilities, Retail or wholesale stores, Sales rooms

Allowable Area & Height:

The table below summarizes the allowable area per occupancy. It is assumed that the occupancy types are non-separated, meaning that a fire barrier exists between each occupancy. The primary purpose of this table is to show the actual areas in comparison with allowable areas based on current code requirements. Based on the information below the Education classification would not be a compatible use for the Albert Fisher Mansion.

TABLE 1 – ALLOWABLE AREA AND HEIGHT

Occupancy Classification	Construction Type	Base Allowable Area (S.F. per floor)	Area Increase due to Fire Sprinklers (S.F. per floor)	Actual Height (in stories)	Allowable Height (in stories)	Height Increase (Fire Sprinklers)	Total Height Allowed (in Stories)
A-2	V-A	11,500	23,000	3	2	+1	3
A-3	V-A	11,500	23,000	3	2	+1	3
R-1	V-A	12,000	24,000	3	3	+1	4
R-2	V-A	12,000	24,000	3	3	+1	4
E	V-A	18,500	37,000	3	1	+1	2
B	V-A	18,000	36,000	3	3	+1	4
I-1	V-A	10,500	21,000	3	3	+1	4
M	V-A	14,000	28,000	3	3	+1	4

From Table 503.1, IBC 2007. Note the height and area increases are allowed if an approved automatic fire sprinkler system is installed. The increases shall not apply however if the sprinkler system is necessary to exempt out of the interior fire rated assemblies.

FIRE SPRINKLERS

The existing building is currently sprinkled and the system seems to be intact. It is unclear how compliant the current system is. The ceilings were not lowered to accommodate the sprinkler system, the piping is simply suspended below the ceiling attaching to the floor structure above. A thorough examination of the existing system should be performed by a licensed engineer to determine if it meets the minimum code requirements.

ATRIUMS

An atrium is defined as "an opening connecting two or more stories…. Stories, as used in this definition, do not include balconies within assembly groups or mezzanines…." (IBC 2006, Section 404.1) If returned to its historic condition, the main staircase in the existing mansion will create an atrium situation by connecting all three stories without any separations. To meet the intent of the code if the third level were separated from the open stair by means of fire doors and a vertical shaft above the decorative glazed ceiling window to

the skylight above, the atrium would only connect two stories and be acceptable by code.

Atriums have the architectural advantage of opening spaces, creating volume, and enhancing wayfinding in a building. The disadvantage of an atrium, especially those not constructed per code requirements, is that they are dangerous during fires. As an example, if a fire started on the first level the smoke would rise, filling the corridors on the second and third levels. The atrium as originally built could also give a fire an easy passage between levels allowing it to spread quickly throughout the building. Because of the presence of the sprinkler system there is a valid reason to allow the staircase to return to its original configuration. However, if the main entry is to be left open between two or more floors, the following additional requirements should be met:

The atrium should to be separated from adjacent spaces by a 1-hour fire rated wall consistent with Section 404.5.

All interior finishes in the atrium are to have a Class B flame spread rate consistent with Section 404.7.

Smoke control system is not required per Sections 1019.1, exceptions 8. Exceptions 8 states that "…a maximum of 50 percent of egress stairways serving one adjacent floor are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Any two such interconnected floors shall not be open to other floors." (IBC 2006, Section 1020.1, exception 8)

BUILDING EGRESS, VERTICAL EXIT ENCLOSURES, ACCESSIBLE MEANS OF EGRESS

The ability to safely and quickly exit a building in an emergency is one of the fundamental principles in life safety design. The term used for this is "Means of Egress." A means of egress as defined in the building code as "a continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a public way." (IBC 2003, Section 1002)

Depending on the occupant load for the building, code may require that each floor in the building have two 'means of egress.' Even though the floors have access to exit stairs, the stairways themselves may not meet current code requirements that would allow them to be considered part of a 'means of egress.' The egress stairs in the building should be enclosed in a minimum 1-hour fire rated construction and should exit directly to the exterior of the building or to an equally rated space. The most problematic occupancy types would be the assembly types where the occupant load (over 50) would trigger these requirements.

Along with general egress from the building, provisions must be made for accessible means of egress. Accessible means of egress allow for those with disabilities, such as blindness, inability to walk, etc., to also exit safely from the building. Because the building is existing, providing an accessible mean of egress is not required as part of the building alteration. (IBC 2006, Section 1007.1, exception 1) In some cases an elevator can be used as an accessible means of egress, but only if it meets certain strict criteria. In this case, if an elevator were to be installed during the renovation, some consideration should be given to meeting this requirement.

FIRE SEPARATIONS

Code mandates that certain uses or functions of a building be separated from each other by fire rated construction assemblies. A fire rated assembly is an assembly (such as a CMU wall or wood studs with gypsum board) that has been tested and shown to withstand the presence of smoke and fire for a specified time. Fire rated assemblies may have ratings between 30 minutes and 4 hours. The general recommendations should include upgrading to code mandated fire rated assemblies as required.

In the case of the Albert Fisher Mansion there are a number of primary areas where fire rated assemblies

should be installed as part of the remodeling process. These are:

- Between the atrium and the remainder of the building. (1-hour fire rated assembly)
- The walls and ceiling of the vertical stair enclosures for the stairs designated as egress stairways. (1-hour fire rated assembly) The stairs shall not function as air returns for the mechanical systems.
- The shafts used for the elevator, plumbing, mechanical, and electrical systems that penetrate the building's floor system. (1 hour fire rated assembly depending on the number of floors penetrated)
- Between mixed occupancy areas.

GENERAL LIFE SAFETY

In addition to the specific items discussed above, the following general recommendations are noted:

Modification of all doors that serve an occupant load of 50 or more to swing in the direction of exit travel.

Location of exit signs to be clearly visible from the primary corridors and show the direction and entry to the exit doors or the egress stairways.

Seismically brace all mechanical and/or suspended ceiling systems that will remain in the building.

Seismically brace all parapets, cornices, or large ornamental stone work that could pose a potential falling hazard.

ACCESSIBILITY

The purpose of accessibility is to make the site and building accessible to and usable by people with such physical disabilities as "the inability to walk, difficulty walking, reliance on walking aids, blindness and visual impairment, deafness and hearing impairment, incoordination, reaching and manipulation disabilities, lack of stamina, difficulty interpreting and reacting to sensory information, and extremes of physical size." (ANSI 117.1-98, 1)

ACCESSIBLE ACCESS AND EGRESS

All portions of the building that are public or accessible to the public are required to be accessible. To be accessible to all levels of the building, access into the building and to all public spaces in the building is required. Areas such as janitor's closets, mechanical rooms, and attic and basement spaces are not required to be accessible. The primary accessibility deficiency that was noted is the lack of an elevator. The majority of the door hardware in the building is knob style. All door hardware to spaces considered public is required to be lever style. Accessibility upgrades into the building should be evaluated. An inconspicuous ramp could be installed to the large porch which would allow access into the front entrance.

The access or clearance on either side of the doors is also an issue. Doors that have both a latch and closer are required to have 18" clear adjacent to the door on the latch side of the door when it is being pulled, and 12" on the latch side of the door when it is being pushed. If the door lacks the closer or the latch it only has to comply with the pull side requirements. In addition, depending on the approach, a clear space of 48 or 60 inches is required directly in front of the door. The areas noted for having the most problems were entrances into the rooms from the corridors. In some cases, the required clear space is not possible given the narrowness of the historic corridors.

ACCESSIBLE RESTROOMS IN PUBLIC SPACES ON MAIN LEVEL

There is a small restroom on the main level and a larger restroom on the second level in the historic mansion that do not meet the current requirements for accessible restrooms. The primary recommendations for the public restrooms on the main level are as therefore as follows:

With the assumption that all restrooms will be rebuilt, provide at least one toilet stall, and urinal (in men's restroom), for each restroom that meets the size requirements for accessibility (56x60 inches).

The placement of the toilet is to be 18" from the side wall to the center of the toilet.

Grab bars are to be provided behind (36") and on the wall side of the toilet (42").

The door to the accessible stall is to be self closing with handles on both sides of the door. The latch is to be lever style.

The supply and waste plumbing under the sinks are to be insulated.

The mirrors are to be mounted no higher than 40".

All accessories around the sink should be mounted within required reach requirements.

In the men's restroom at least one urinal should be mounted at 17" and have a clear space of 30x48 inches.

ACCESSIBILITY IN RESIDENTIAL OCCUPANCIES

Depending on the use of the building the following discussion focuses on accessibility for a residential use. The current code states for R-1 occupancies that "Where . . .dwelling or sleeping units are being altered or added, the requirements . . . for accessible or Type A units and . . . for accessible alarms apply." (IBC 2006, 3409.8.7) Specific to the R-1 occupancy, 1 accessible unit is required per Table 1107.6.1.1, Accessible Dwelling and Sleeping Units. Futhermore, "in structures with 4 or more dwelling or sleeping units intended to be occupied as a residence, every dwelling and sleeping unit . . . shall be a Type B unit." (IBC 2006, 1107.6.1.2) Further, the doorways to the individual dwelling units should comply with the minimum clear widths required, "Doorways shall have a clear opening of 32 inches (815 mm) minimum. Clear opening of doorways with swinging doors shall be measured between the face of door and stop." (ICC/ANSI A117.1-1998, 404.2.3) The following recommendations should be considered:

With the assumption that all restrooms will be rebuilt as part of the individual room restorations, at least one fully accessible unit should be provided on each of the 2nd and 3rd floors for a total of two accessible units as defined by ICC/ANSI A117.1-1998. (Please see Appendix 2 for further specification on Type "A" Units)

All residential dwelling and sleeping units with the exception of the accessible units as described above should be Type B units as defined by ICC/ANSI A117.1-1998. (Please see Appendix 2 for further specification on Type "B" Units)

ROOM SIGNS

None of the room signs or exit directional signs meet accessibility requirements. All room identification signs should be mounted between 48 inches to 60 inches above the floor, have raised characters contrasting with the field color of the sign, and have grade II Braille. Rooms specifically required to have accessible signs are restroom, conference rooms, exit stairs, the elevator, and doors into the different departments.

DRINKING FOUNTAINS

There are currently no drinking fountains installed in the building. New drinking fountains should be installed that meet all accessibility requirements. Since they are in the corridors, they need to be installed so as not to be considered an obstruction. The easiest way to accommodate this is to recess the fountain so that a maximum of 4" is protruding from the face of the corridor wall. An alternate option is to provide a wing wall.

LIFE SAFETY RECOMMENDATIONS

The egress system of a building includes elements such as stairs, corridors, exit signs, lighting, doors, and hardware. The stairs and corridors should be upgraded to comply with current code and meet fire rating, smoke control requirements, and collapse prevention require-

ments. Since the walls and ceilings for both of these systems are existing, further study should be made to determine what upgrades are required (if any) to make these systems work at the desired fire rating level. The general recommendations should include upgrading to code mandated fire rated assemblies as required, however. Any penetrations in rated wall assemblies are to be rated assemblies (1-hour for stairs, and 20 minute for corridors), this includes doors and jambs.

The doors along egress routes are to swing in the direction of egress travel and are to have hardware that allows use of the door without any special knowledge or device.

The lighting and egress signage should be completely upgraded. Emergency lights are to be placed to allow for all areas of the means of egress to be illuminated at all times that the building is occupied. A 1-footcandle illumination level is required at the floor level along with an emergency power system to allow operation of the emergency lights in case of a power outage. The egress signs are to be placed to allow visual access to an exit from all portions of the occupied space. These signs are to be illuminated.

Accessible egress must also be considered in this recommendation. Currently there is no floor level in the building that meets all the requirements for accessible egress. Each level is required a minimum of two accessible means of egress. An accessible means of egress includes access to grade, a horizontal exit, an exit stair with an area of refuge, and an elevator with emergency power and communication (not determined in this study). The recommendation is, with the enclosure of the stairs, that provisions be made to incorporate areas of refuge on all levels in at least two of the stairwells. From these points those with disabilities can communicate with the fire department and have a safe place to wait for assistance.

The next recommendation concerns the atrium condition of the main stair. Current code would require this stair along with the others to be enclosed so as not to allow the free movement of smoke between building levels. The enclosure of this stair is problematic due to its negative impact on the historic character of the interior. The possibility of leaving the stairway open should be of the highest priority and should comply with fire separation requirements for principal corridors and the need to install a sufficient smoke evacuation system.

Lastly, a comprehensive structural engineering analysis with recommendations should be performed before any substantial planning occurs.

ACCESSIBILITY RECOMMENDATIONS

The recommendations for accessibility are global and general at this point. It is assumed that with the future renovation some of the accessibility issues facing the building can be easily mitigated, however, some issues will be more problematic and may require some compromise to allow for building preservation.

The majority of the building cannot be considered accessible due to inadequacies such as lack of an elevator, lack of an accessible entrance, non-compliant door hardware, clearances at doors, threshold heights, and room and directional signage. It is recommended that to the extent possible accessible access be made to all primary functions of the building. Specifically this will include such items as:

- Provide an elevator.
- Provide an accessible ramp.
- Provide necessary clearances at doors (both sides).
- Provide access within rooms, around furnishings etc…
- Replace or upgrade door hardware to allow for a lever style handle
- Reduce height of thresholds or level changes where the threshold is greater than ½".
- Provide room identification signs for all public areas, exit stairs, and exit routes. The signs are to

have raised characters of contrasting colors to the background as well as Braille.

- Remove or provide warning for all obstructions along walls that protrude into accessible routes more than 4".
- Provide drinking fountains that allow for front approach in a wheelchair.
- Upgrade built-in reception desks to allow for accessible access (height and knee clearances).

These recommendations may create some issues due to existing historic conditions. Some changes to the building fabric to the standards imposed by the code could be detrimental to the original architectural character and such modification should be thoroughly studied prior to recommendation.

As stated in the analysis section, there are no restrooms noted in the building that meet accessibility requirements. If the renovation includes rebuilding the existing restrooms, all new or modified restrooms in the building should be made accessible. Accessible restrooms shall have the following features:

- Access into the restroom and to lavatories, toilets, and urinals.
- The lavatory is to have the required knee clearness and height to allow for front approach wheel chair access.
- Provide correct mounting heights to allow access to mirrors, soap dispensers, and paper towel dispensers.
- Provide insulation on supply and waste pipes under the lavatory counter.
- Provide at least one accessible water closet with associated grab bars, and accessories mounted at correct heights.
- Provide at least one urinal (where provided) that is accessible.

The primary consideration with this will be the need to plan for slightly larger restrooms to accommodate necessary clearances at the restroom fixtures.

SECTION SEVEN: SUSTAINABILITY & LEED CERTIFICATION

This section includes two components. The first is a supplemental report prepared by Professor Robert A. Young for the HSR conducted by the University of Utah students on the issues and opportunities to be taken into consideration regarding sustainability and energy conservation; the other is a LEED certification checklist of the potential points that could be achieved as part of the restoration/renovation process. These points are presumed to be achievable in either a preservation or restoration treatment approach.

SUSTAINABILITY & ENERGY CONSERVATION

Any alteration to the exterior of the building that affects the exterior visual appearance will need to be reviewed by the Salt Lake City Historic Landmarks Commission (SLCHLC). This would primarily involve the introduction of replacement windows, roof mounted photovoltaic panels and solar hot water panels, and any roof mounted HVAC equipment systems that are visible from a public way. Likewise any additions to the building must conform to the SLCHLC design guidelines. Placement of panels and mechanical equipment on the ground adjoining the building may be possible after consultation with the SLCHLC so long as they do not diminish the visual appearance of the building or grounds.

TWO OVERARCHING ASPECTS

Often overlooked in many adaptive use projects are the concepts of embodied energy and the impact that reusing/recycling buildings and their components can have on advancing the goals of sustainable design. In this light, the immediate urge to completely replace a building component should be tempered by the recognition that with each component that is simply sent to a landfill and is not recycled, the energy that it took create that element is permanently wasted. Similarly, every component that is thrown away imparts new pressures on landfills and creates the need to extract new raw materials and use energy to fabricate its replacement.

While not all building components can be immediately sequestered into a recycling stream, the decision to demolition them and replace them with a new element should be considered carefully. When the true recognition of embodied energy and the reduction of new extraction and demolition waste streams are understood, then the true measure of how sustainable the strategies of preservation and adaptive use will become more apparent and subsequently a larger part of the sustainability movement.

CHARACTER DEFINING PASSIVE THERMAL AND DAYLIGHTING FEATURES

Constructed in a period before modern heating, ventilating, and air-conditioning systems had been introduced, the Fisher Mansion is typical of buildings that were designed in relation to the available passive non-mechanical systems of the era. Site orientation, building materials, building massing, and attention to

solar access for passive solar heating and daylighting were more common and better understood to be a basic part of the thermal and luminous environmental control systems of a building.

The Fisher Mansion is comprised of primarily brick facades with stone foundations, sills, lintels, and other ornamental stone features. There is a limited amount of wood shingle-clad, stick-framed wall enclosing the north portion of the third floor. The roof is comprised of shingles attached to sheathing nailed to a wood framing system. The vertical massing of this house is typical of home of this type and originally featured a central skylight atrium that has subsequently been enclosed with gypsum wallboard and stick framing. The two-story Carriage House located to the northwest of the Fisher Mansion is similarly constructed of brick with a shingled roof. As was common for outbuildings of the period, there was no insulation installed during its original construction.

The site has several fully mature deciduous trees whose leaves provide a natural solar shade during the summer months. During the winter months, the bare deciduous trees admit significant quantities of solar radiation which aids in passive solar gain of the building. The site adjoins the Jordan River which flows along the western boundary of the property and may provide some cooling relief due to the effects of evaporative cooling in the area immediately adjoining the river. There is little undergrowth in the landscaping to interfere with beneficially cooling summer breezes but conversely the landscaping does little to deflect winter winds. Although the predominant winter wind direction in Salt Lake City is from the SSE, the Carriage House does act as a wind deflector when colder winter winds come from the northwest.

Like other large residential buildings of this era, the Fisher Mansion originally took advantage of porches to provide shelter from the sun and the rain. The main porch along the south and east elevations remains in place while the secondary porches at the northeast and northwest corners of the mansion have been expanded and/or enclosed to create additional interior space. Large windows provided opportunities for passive solar gain in the winter and daylighting year-round. Operable transom windows above the exterior doors provided daylight and a means for passive ventilation when the doors themselves were closed. The vestibule at the main entrance provided an air lock to prevent winter winds from directly entering the first floor hall and adjoining rooms.

On the interior, key features include a skylight stairwell (currently enclosed), high ceilings, light colored walls, glazing panels in doors, tall operable windows along the exterior walls, and transom windows above doors. The stairwell, which is conceptually an atrium that acts as a solar chimney, was a critical component of how the building was passively daylit and cooled. When the stairwell was originally constructed, the open, skylit stairwell allowed daylight to enter the central core of the building where it could brighten otherwise dark hallways and provide "borrowed" light through the glazing in the adjoining doors and the transom windows above them. The high ceilings allow summer heat to rise away from the habitable space of the occupied rooms. The existing light colored walls (presumably concealing darker Victorian era wall paper) enhance the reflection and penetration of the daylight into the interior spaces. The tall operable windows could be opened to admit fresh air when outside air temperatures were within the comfort range or simply to provide a comforting flow of moving air. Lastly the transom windows, provided a dual opportunity admitting daylight from the open stairwell skylight as well as an opportunity for cross ventilation when used in conjunction with the operable windows and the three story atrium created by the skylit stairwell. In the era of the construction of this house, prior to the

invention of mechanical air conditioning systems, cross ventilation was a primary means of providing cooling comfort (or heat mitigation) by enhancing the passage of air through the occupied spaces. Nighttime cooling was achieved by leaving the lower window sash and transom windows open thereby allowing the air to flow through the rooms and enter the stairwell via the transom. The natural buoyancy of the warm air causes it to rise through the stairwell atrium and either flow into the attic or through a skylight in the roof.

BUILDING ENVELOPE

The stone foundation and brick exterior walls provide a thermal mass which mitigates the thermal variances due to the solar gain and acts as a thermal storage device. Unlike wood framed walls, masonry veneer walls, and modern metal curtain walls, heavy masonry walls act to more slowly absorb heat and then later release it when air and surface temperatures begin to fall. Although the common practice of using blown-in insulation or expandable insulating foam products is viable for modern twentieth century wall systems that feature a hollow wall cavity, masonry construction of the nineteenth century (and earlier) does not include a cavity to receive this type of insulation upgrade. One alternative that has been used to the severe detriment of interior finishes and living space has been to fur out a nominal cavity or by constructing an actual framed partition wall on the exposed interior wall surface, filling the cavity with insulation and enclosing the surface with gypsum wallboard or a modern plaster and lath system. The woodwork is then refit to match the change in dimensions of the casework and trim. This is not a viable solution for the Fisher Mansion interiors that are enclosed by the exterior masonry walls.

Another alternative is to blow in insulation or inject expandable insulating foams into wall and ceiling cavities. Care should be taken to identify locations where the original knob and tube wiring could be compromised by either installation process. Blown in insulation comes in the form of cellulose (e.g., recycled newspaper) or shredded cloth (e.g., denim) that has been treated to make it insect proof and fire resistant. When using expandable foam insulation products, additional care is needed to select a foam product that does not introduce environmental contaminants into the building and is formulated for use in existing buildings. Many foam products are intended for new construction where the cavity space is filled with the expanding foam and then the excess is trimmed away before the interior gypsum wallboard is attached. Foams intended for existing construction do not expand as rapidly or as significantly and therefore reduce the possibility that the pressure created by the expanding foam will damage the existing plaster and lath already secured to the wall or ceiling. The following opportunities to increase the thermal insulation and decrease infiltration exist at the Fisher Mansion:

Insulate wood-framed cavity walls and roof: The wood framed roof of the Fisher Mansion and the walls of the room at the north end of the third floor are feasible candidates for insulation upgrades, if they have not already been upgraded. Further inspection by removing discreet portions of the wall and ceiling by an accredited professional will determine where these opportunities exist.

Insulate ceiling at the foundation perimeter in basement: There are a number of opportunities to investigate the feasibility of inserting insulation within the floor cavity along the perimeter of the building. Although the ceiling is enclosed in many of the rooms, it may be possible to demount the ceiling or to drill access holes in which to enable insulation to be blown or foam injected to reduce both thermal conductance and infiltration into the building along the top of the foundation walls.

Insulate converted window openings in the basement: There are several locations where original window openings have been converted to use as an air intake or discharge. The infill surrounding these ducts should be insulated and sealed to reduce thermal conduction and infiltration.

Insulate/weather strip doors and other openings: Several doors and other former window openings open directly to the outdoors or into the basement accessible crawlspace. These doors should be weather stripped and the openings should be filled or covered with an airtight insulated access panel.

WINDOWS

The wood sash windows of the Fisher Mansion are a character-defining feature, especially the curved glass windows and beveled art glass windows located in the projecting bays and the tower as well as the art glass in some interior doors. While the single pane glass is less energy efficient than modern glazing such as double paned low-emittance windows, a major culprit in heat loss is through the infiltration of cold winter air (and to a lesser extent hot air in the summer) that occurs along the edges where the window sash and where the window frame and the building frame come together. There are several steps that can be taken to improve the efficiency of the windows:

Caulking: Infiltration due to lack of maintenance of caulking around windows is a common heat loss/heat gain problem in older houses. Verify the condition of caulking repair/replace as needed.

Weather stripping: Similarly, the absence or failure of weather stripping can allow infiltration to increase. Verify the condition and as repair/replace as needed. There are several strategies for inserting new weather stripping into existing windows that include installing V-shaped brass strips in the vertical spaces along the side of the sash. Similarly, it is possible to insert Velcro or other materials to form an infiltration barrier along the meeting rails of the upper and lower sash.

Storm windows: While exterior storm windows can be fabricated for the non-curved windows, the use of interior storm windows presents a less visually intrusive strategy that preserves the historic appearance of the exterior. These units can be fabricated to include interchangeable screen and glass inserts so that fresh air can be admitted during temperate months of the year. Aluminum exterior windows are not recommended since they will detract from the historic appearance of the building. Storm windows are not recommended for the curved glazing or the art glass windows in the tower and projecting bays.

Double glazing: In the flat glazing, it may be possible to replace the single pane glass with double pane inserts by removing the single pane glazing, routing an appropriate channel in the sash/muntin bars, and inserting a full double pane replacement. Consultation with a window restoration specialist can confirm the applicability of this strategy. Full replacement (both glass and sash) of the flat glazed windows may not be economically feasible since the cost to recover the demolition and the replacement cost of new windows have been shown to be less economical and less environmentally sustainable practices. Studies have shown that recaulking, weather stripping, and refitting the existing windows has a significantly shorter payback period that full replacement. However, should double glazing still be desired, the replacement windows can be simulated divided light or true divided light windows. In a simulated divided light window, one double-paned unit replaces all of the glazing in each separate sash. The exterior and interior portions of the glazing unit include false muntins as needed to replicate the original appearance of the window and provide appropriate shadow lines that give the window its

historic character. The windows are custom made and the gap between the two panes of glass is concealed by a metal insert that aligns with the location of the muntin bars to provide the appearance of a continuous muntin bar through the window unit. In a true divided light window, each individual pane would be replaced with a double paned glazing unit that matches the pattern and size of the original window. Depending upon the number of false muntin bars, the simulated divided light window is typically less expensive that an assembly of true divided light windows. Reglazing the curved windows with double glazing will most likely be cost prohibitive since they will require a specific custom made window. For further information on this practice contact the Salt Lake City Historic Landmarks Commission or the Utah State Historic Preservation Office. Any replacement windows should match the original window opening size, the shadow profile of the muntin and sash, and the opening size of individual panes of the windows they replace. To install new windows of smaller size and infilling the space around them is not an acceptable practice under the Secretary of the Interior Standards (Standards) which form the basis for most reviewing agencies involved with the oversight of historic buildings. Similarly, complete replacement with vinyl windows with nominal shadow lines from muntins and sash and decreased window glazing open area is not acceptable. Lastly, replacement of glazing units with one single continuous sheet of double paned glazing that does not replicate the muntin profiles or omits them altogether is not in conformance with the Standards as well.

Repair basement windows: The basement windows should be re-glazed and the weather stripping repaired or replaced. The broken or missing windows should be repaired or replaced. Specific attention should be given to those windows and crawlspace vents in the exposed foundation wall that lead directly for the exterior.

Reopen the stairwell/atrium: The central atrium skylight that forms the stairwell has been enclosed with a gypsum wallboard partition. The stairwell terminates at the third floor which was originally an unheated attic space. There is a second skylight located in the roof directly above the skylight that caps the stairwell. As explained above, this atrium originally acted as a primary passive mechanism for both lighting and ventilation. It is strongly recommended that efforts to reopen the stairwell should be pursued as it can provide a focal point for sustainable design efforts within the building. Beyond simply ensuring the visual privacy between floors, the construction of the existing enclosing partition was possibly driven by the need to retain heat on the lower floors in the winter. With this factor in mind, it may still be possible to reuse the stairwell as a daylighting and passive cooling element by enclosing the stairwell with a fire-rated glass enclosure system coupled with a thermostatically or digitally controlled louver or exhaust system located in the attic. Coordination of this design would involve the mechanical systems consultant, the Fire Marshall, and the intended occupants since this atrium would need to meet life safety requirements for fire and smoke control. A contemporary example of this can be seen at the Big-D Construction Company Headquarters in Salt Lake City.

HEATING, VENTILATING, AND AIR-CONDITIONING SYSTEMS

In its original construction, the Fisher Mansion was heated with a gravity powered warm-air furnace. There are no indications of any steam or hot-water radiators within the Fisher Mansion. Each room is served by a heating register located within the wall along the baseboard. The gravity return register is located in an alcove under the stairs at the first floor. The third floor was originally an attic space in which a mechanically driven warm air furnace has been added. Other heating sources came from the two fireplaces located on the first floor and are currently not in use. An assess-

ment of the viability of reusing these fireplaces needs to be completed by a building inspector to determine their suitability for safe use.

Originally, cooling was based on the cross ventilation and the air movement effects generated by air moving through the interior spaces and the three-story stairwell/atrium. Currently there are several separate mechanical cooling systems in place at the Fisher Mansion. These include several evaporative coolers located on the roof and in windows adjoining the spaces they served. There is also one window air-conditioner serving a room that was created in the enclosed northeast porch. An air-conditioning condenser unit is located on the ground between the parking lot and the north façade. Visual inspection could not reveal what system this unit serves.

The original heating system is a centralized configuration with the furnace located in the basement. The centralized nature of this warm air system enabled a variety of filtration and humidification aspects not found in buildings heated by steam or hot-water radiation alone. The building was treated as one large single thermostatic zone that was controlled by one thermostat. What it was not designed to do was to compensate for the stack effect of the buoyant warm air that it generated. Warm air rises like smoke through a chimney stack, hence the term "stack effect." With the enclosure of the stairwell, the various spaces served by the heating system were isolated floor by floor. From a heating perspective, this trapped warm air at the ceiling level rather than permitting it to flow freely by natural buoyancy up the stairwell to the floors above. From a cooling perspective this eliminated the natural convective cooling generated by the air flow into the stairwell/atrium. The numerous additional mechanical cooling systems point towards both a shift in what was expected in terms of comfort and the fact that the natural ventilation system of the original construction no longer was deemed adequate.

The centralized nature of the original heating source for the first and second floors points to several potential opportunities to make the Fisher Mansion more energy efficient and, therefore, more sustainable:

Non-residential HVAC system: The existing HVAC system is the outgrowth of the original gravity fed warm air furnace system found on large residential buildings in the late-nineteenth century. Through the years various modifications and overlays that reflect the change in use from a single family dwelling to a convent and a halfway house have resulted in an agglomeration of several different systems. Investigation of conversion/replacement with a non-residentially oriented HVAC system is in order. There appears to be sufficient space in the basement to install a small multi-zone system that could serve all three floors individually as well as providing for multiple thermostatic zones on each floor. Further investigation is needed to determine if the original ductwork, at a minimum, could be isolated by floor and also be augmented by extending new ductwork to serve the third floor. In this fashion, the control of temperature, humidity, and air-filtration could be completed from one single heating/cooling source. This will also allow removal of the various evaporative coolers and window air-conditioners thereby reducing overall maintenance expenses (e.g., number of equipment locations, equipment obsolescence) and improving the visual appearance of the building. A local example of this can be found in several of the formerly residential buildings converted to office space at Fort Douglas.

Ground-coupled heat pump: Replace the existing heating source with a ground-coupled heat pump that can be used to seasonally provide heating or cooling as needed. The piping field needed to facilitate the ground source heat exchange could be located beneath the parking lot located just north of the Fisher

Mansion using either a vertical configuration if geologic conditions allow or in a horizontal configuration otherwise. If a heat pump is installed, it could serve to heat and cool the building and thus eliminate the need for the various evaporative coolers and air-conditioning systems currently in place. The immediate adjacency of the Jordan River may also provide opportunities for seasonal heat exchanges.

Digital controls: Opportunities in this regard can ranges from simple time clock and programmable thermostats to a fully automated central digital control system locate onsite that can be remotely accessed from a remote site if needed.

Enthalpy economization: The centralized air distribution network also allows for a digitally controlled monitoring system which compares the heat content of the outdoor air and automatically switches from mechanically cooled air to outdoor air when the outdoor is sufficiently cool to provide comfort cooling. The addition of an appropriately sized fresh air intake would need to be integrated into the existing system to accommodate the airflow requirements. This option would become more viable if a non-residential system has been installed to replace the existing system.

Stairwell/atrium as solar chimney/stack ventilator: As mentioned earlier, the enclosed stairwell/atrium could be reopened to allow air and light to pass through it. This introduces a disadvantage to the heating aspects since (if not adequately controlled) heated air in the winter would flow into the atrium and essentially be wasted. However, this reintroduces the natural cooling process of the original building design. In either case, the air flow would need to be controlled in some fashion. This can be accomplished by installing an appropriately fire-rated glass enclosure system in place of the gypsum wallboard partition and installing a thermostatically or digitally controlled exhaust system at the top of the stairwell/atrium. This strategy also opens the possibility for the use of "free cooling" in the summer by allowing the stairwell/atrium to act as a mechanism to relieve heats gains in the summer. In this scenario, cooler nighttime air is introduced into the building to flush out the accumulated heat gained during the day and is drawn upward by either natural convection or mechanical ventilation. The combination of the fresh outdoor air with the thermal mass of the exterior brick walls provides the catalyst for reducing the overall mechanical cooling needed during the daytime hours. The mechanical equipment for this integrated system could be located within the third floor space. By extension, the air exhausted from the top of the atrium could be used in a heat exchange system to preheat domestic hot water.

Low profile paddle fans on the ceiling: Due to the high ceilings found in the Fisher Mansion, heat rises above the occupied space year round. In the summer this is desirable, however, in winter that heat is better used within the occupied space. Consider installing a low profile paddle fan in each room. Careful attention needs to be made to not compromise the visual integrity of the space involved, especially those spaces that have an original period chandelier. This is achievable by selecting fans that do not project lower than the line of sight created by existing fixtures or visually intrude on the appearance of the chandeliers. Many fans of this type are reversible to enhance the movement of air upward or downward as seasonal needs warrant.

Existing HVAC equipment tuning and calibration: At a minimum, all HVAC equipment should be tested and tuned to optimize performance.

Ductwork cleaning: Where possible, the interior of the ductwork should be cleaned to remove accumulated dirt and other foreign materials.

Fireplaces: The existing fireplaces are character-defining features of the spaces where they are located. If future use is not feasible, seal the flues to eliminate air flow and prevent wasting heat. If further use is considered feasible, consider converting to a natural gas fuel source and integrate venting and combustion air intakes to a concealed location on the exterior of the building.

Kitchen exhaust hood: The commercial kitchen fume hood includes an industrial kitchen fan. Determine if future use is warranted. In not remove and block opening to reduce infiltration.

LIGHTING

Many of the light fixtures have already been updated with compact fluorescent lamps. Continued exercise of this strategy is encouraged, however, care must be taken to meet the actual lighting requirements of any new use of the interior spaces. The limited number of fixtures and their location (e.g., chandeliers and wall sconces) indicate the need for the use of supplemental lighting. The following considerations are advised for the new lighting system:

Supplemental lighting: While the existing light fixtures are part of the historic character defining features of the interior spaces (along with the ample daylighting), supplemental lighting could come in the form of desktop and other task lighting sources. Depending on the final use of the building, discreet track lighting and recessed lighting systems could be installed in the ceiling to meet lighting needs. A local example of this can be seen at the Chase Home Museum of Folk Art at Liberty Park that was a noted conversion of the Chase family house into an art gallery. Care should be used in sensitively installing the new wiring to service any new lighting systems. Surface mounted wiring should be avoided.

Digital control: Many of the lights are controlled manually and consideration should be given to installing a multi-signal occupancy sensor (e.g., a sensor that uses two or more inputs such as motion, infrared, and ultrasonic energy to determine occupancy). Exterior security lighting could be controlled by a two stage sensor that operates the light at a lower light output until activated by motion, infrared and ultrasonic detection whereupon the light comes to a full output state.

UTILITIES AND SERVICE SYSTEMS

The electrical system is comprised of a number of obsolete plug receptacles located in the baseboards. These receptacles do not include the contemporary third prong that is used to ground the devises being plugged into them. Further investigation will be needed to determine if the Fisher Mansion has sufficient power circuits to supply adequate electricity for the intended use and whether expansion is possible.

The plumbing systems are of late-twentieth century manufacture and do not appear to include any of the more modern water-conserving toilets and faucets. Further investigation is needed into what the plumbing requirements will be for any new programmatic uses that are to be introduced. Only two fixtures in the Fisher Mansion appear to be of an appreciable age to merit consideration as a historic character defining feature. The pedestal sink in the first floor powder room adjacent to the door to the basement is made of enameled cast iron and is unique in the building. The service sink in the basement is the other potentially historic fixture. Note: this sink is served by a drum trap which is no longer allowed by code. In the closet at the top of the stairs on the third floor are the remains of some type of cistern system (i.e., metal tank with a float valve). Consideration for the reactivation of this cistern may provide opportunities for rainwater capture that can be used for irrigation of the grounds. Other

sustainable measures would involve xeriscaping the grounds and/or installing drip irrigation systems.

CONCLUDING COMMENT

The Fisher Mansion presents a number of opportunities as a demonstration of what can be accomplished when adaptively using an existing historic landmark for contemporary use. While the opportunities that affect the historic character defining features of the building must come under the review of the SLCHLC, this is not typically an onerous process if the selections of appropriately sensitive changes are considered. The key to a successful solution is to keep the various reviewing boards and constituencies informed along the decision making process. As the growing number of successfully adaptively used historic buildings grows both locally and nationally, this building once again provides the chance to demonstrate that preservation is an advanced sustainability strategy.

* These considerations were compiled by Robert A. Young, PE, Associate Professor and Historic Preservation Program Director at the University of Utah College of Architecture + Planning as a supplement to the historic structures report on the Fisher Mansion in Salt Lake City prepared as a service learning project for ARCH-6570 in partnership with the Salt Lake City Historic Landmarks Commission. For comments or further information contact him at (801) 581-3909 or via email at young@arch.utah.edu.

SECTION EIGHT: STRUCTURAL & BUILDING SYSTEMS ANALYSIS

STRUCTURAL SYSTEM:

The Fisher Mansion's structure remains largely intact. It consists of an unreinforced brick masonry superstructure, with cut, rough-faced sandstone foundation walls, and wood frame floors. Below grade the foundation wall consists of un-cut fieldstone with mortared joints. The roof structure consists of wood joists. There is not a known set of original drawings of the structure, as designed by architect Kletting. The mansion was constructed before the existence of building codes and seismic-resistant engineering; the building has, however, largely stood the test of time over its 107 year history, with only indications of some acute settling and associated cracking on the west side adjacent to the Jordan River. No history of major earthquakes is known for this area to test its seismic-resistance capacity.

Recommendations:

The structural and seismic upgrade recommendations recognize the significant historic value of the existing structure and materials. Many of the recommended approaches are non-invasive to the existing historic fabric, while some require more invasive integration. The goal of the recommendations is to stabilize the building(s) to enhance the life and safety of the occupants during a significant seismic event. The recommendations do not suggest that the building(s) would survive a seismic event, only that risk factors to life and safety would be minimized. The recommended upgrades are designed to 75% of current code requirements for new construction.

Many of the recommendations include highly specialized techniques and trades. For instance, center coring is a structural retrofit which strengthens unreinforced exterior masonry walls. This method of upgrade includes coring a 4" to 6" diameter vertical core at the center of the unreinforced masonry wall from the parapet or top of wall into the foundation. Reinforcing steel bar is then dropped into the core and filled with a polyester resin grout. The resin grout by nature infiltrates voids in the wall and in theory creates a monolithic reinforced wall system. This approach doesn't impact the exterior brick face or the extant material finishes on the interior and is an approach frequently used on high profile preservation projects.

Some approaches are more invasive but not detrimental to extant interior finishes. Of these, strengthening floor and roof diaphragms is the most extensive. This recommendation includes installing structural wood sheathing at each floor level and at the roof. At the roof, the existing roofing materials will be removed and new sheathing will be installed. At the floor levels, because much of the ceiling finishes will be removed for electrical, mechanical and fire sprinkler upgrades, it may be beneficial to consider removing all the ceiling finishes throughout the entire mansion, installing necessary mechanical and electrical system upgrades and then install the wood sheathing on the underside of joists at each floor and roof. The ceiling finishes would then be restored below a layer of gypsum paneling. The drawback to installing it on the underside is that anytime the ceiling joist space

would require work (for electrical, sprinkler or mechanical changes), the wood diaphragm would necessarily be penetrated and therefore the structural capacity would be diminished. The other alternative would be to install the diaphragms on the top side of the ceiling joists. However, this would require the removal of all existing historic floor finishes. The existing finished flooring is in relatively good condition, however, it is a very thin veneer board and refinishing would be difficult in the future. It may be advantageous to remove the existing finish flooring now along with the subflooring and install the new diaphragms and new flooring to match existing. This also allows for future work on the underside of the joists to take place without disrupting the diaphragms.

Finally, the stone foundations would require a 4" to 8" thick shotcrete wall adhered to the inside of the foundation. This has the benefit of upgrading the foundation to current structural standards. Because the exposed foundation is not a primary feature of the historic mansion the recommendation to cover it in concrete is consistent with the overall architectural preservation goals and recommendations. The structural upgrade also calls for the removal of the unreinforced slab on grade. This provides a diaphragm to mitigate the effects of the mansion's location in a high liquefaction zone.

ELECTRICAL SYSTEM

Field observations have revealed that the mansion was wired for electricity when constructed in 1893. Original electrical wiring for the house was found embedded in the flooring on the second level.

Various upgrades to the electrical service have been performed over the history of the building. In many cases this has included the addition of external conduit to the walls and baseboard of the rooms. In 1993, the house received an electrical upgrade as part of a remodeling/kitchen expansion. Interior electrical panels and breaker enclosures vary in size and capacity. The existing electrical system will likely not allow the addition of an elevator.

Recommendations:

It is expected that all electrical systems, including the service, distribution and wiring systems will be replaced if the building is rehabilitated for a new use or fully restored. New systems and equipment will meet modern codes and standards for health and life safety and energy conservation.

The actual size of the new service will be design-specific,i.e. dependent on usage, existing and future loads, and additional loads such as a new elevator. New equipment such as mechanical units should be selected to be compatible with the new electiracl service.

MECHANICAL SYSTEMS

Mechtech Engineering evaluated the existing conditions of the mechanical system of the mansion and carriage house last week. An older natural gas forced air furnace provides heat for the basement, main, and second levels of the mansion. It is an 80% efficiency twin set unit that does not provide air conditioning. The air is distributed through the original heating vents, which are located on interior walls. Modern mechanical systems are generally located near the exterior walls and/or windows. Two electric baseboard heaters on the second level supplement the system. Air conditioning on the main level is provided via two window units. The attic level is heated by a 90% efficiency natural gas furnace that also provides air conditioning. The ductwork for this area is exposed. The carriage house is not heated by a mechanical system.

The plumbing in the mansion is dated, with some pipes being original to the system. Currently, hot water is generated by an 80 gallon natural gas commercial hot

water heater, which is located in the basement. Historically, a cistern in the attic space collected water that was used for the mansion's original plumbing system. The cistern itself is still present in a mechanical room at the top of the stairs to the attic.

Recommendations

While the current systems could continue to serve a residential use of the building, any commercial use would require new mechanical and plumbing systems. Active use of the carriage house would require installation of a mechanical system. The location of the property adjacent to the Jordan River makes it a good candidate for a renewable heating and cooling approach.

SECTION NINE: COST ESTIMATE

COST ESTIMATE NARRATIVE

The following cost estimates for the Albert Fisher Mansion and associated Carriage House represent our opinion of probable costs for renovation and restoration work in 2009. There are many unknown conditions that must be further investigated to provide a more detailed and accurate cost estimate. For example, a survey of existing utilities should be completed as well as geotechnical surveys to determine the soil characteristics. Landscaping and site improvements have been excluded from this estimate. In short, the following cost estimate represents a starting point for restoration work by providing a range for varying levels of renovation/restoration and use categories.

The cost estimate analyses depict two options for both the main house and the carriage house. Option A consists of a full scale restoration of the existing elements and Option B entails preservation and stabilization of the existing elements. The differences between the two approaches are defined below.

The preservation/stabilization approach addresses potentially detrimental issues to the exterior envelope and structure. The main objective of the preservation/stabilization approach is to arrest deterioration of the building until a specific use and treatment approach are identified. The restoration approach, on the other hand, expands the scope of the preservation/stabilization approach to include architectural aesthetics and historically appropriate restoration.

Some specific differences in the cost estimate sections between the two approaches are as follows:

1- General Demolition:

In the preservation/stabilization approach, none of the later additions would be demolished. In the restoration approach the removal of the additions is recommended and included as a cost given their historical inconsistency with the original architecture.

2- Structural:

The preservation/stabilization approach addresses issues in the original structural system that require immediate attention for compliance with life safety and code requirements. This includes upgrading the foundation system through the application of a reinforced concrete wall to the inside of the exterior stone foundation walls and constructing a new slab on grade in the basement, constructing new floor and roof diaphragms, bracing chimneys, and repointing deteriorated masonry. The restoration approach includes all of these upgrades as well as enhancing the lateral resistance in the exterior walls through center coring. Center coring is the structural approach that currently best allows for preservation of existing historic finishes.

3- Exterior Envelope:

The preservation/stabilization approach addresses necessary masonry pointing, painting and cleaning to prevent further damage to existing building fabric. The restoration approach addresses necessary maintenance

concerns as well as a more comprehensive painting approach that includes determining historically appropriate color schemes and addressing the entire structure. Brick repointing includes not only deteriorated areas, but also the removal of inappropriate mortar and replacement with historically appropriate mortars. Window upgrades may include the addition of a double pane to maximize the thermal efficiency of the existing windows while maintaining historical appearances. In some cases existing windows may require replacement due to the level of damage or inappropriate window units that replaced original fabric. The restoration approach also includes door restoration, which will require repair and, in some cases, replacement depending on the level of deterioration. The restoration approach also includes the reconstruction of the original balcony railing above the porch.

4- Roofing:

In the stabilization approach the existing roofing is replaced with an architectural grade asphalt shingle. This includes the repair and replacement of all roof accessories. In the restoration approach the roofing is replaced with historically appropriate cedar shingles, and the original gutters and downspouts are refurbished. Additional gutters and downspouts may be deemed necessary to maximize the effectiveness of the roof's drainage system.

5- Interior Selective Demolition:

There is little interior demolition in the stabilization approach. It is mainly limited to the demolition required for structural and envelope upgrades. There may be some electrical and life safety demolition required to reduce potential risks of original wiring. In the restoration approach, interior demolition includes the necessary demolition described above as well as removal of select walls, finishes, plumbing, mechanical and electrical systems in preparation for the installation of new systems.

6- Interior Architectural Finishes:

In the stabilization approach the interior improvements include painting existing wall surfaces where necessary to finish off patch and repair work and refinishing the wood flooring only to the extent of removing glues, nails, and other residue left from additional layers of flooring.

The restoration approach includes careful restoration of existing wood trim and finishes, restoration and in some cases replacement of wood flooring, wall paper restoration, decorative skylight restoration and installation and or restoration of historic lighting fixtures.

7- Mechanical:

The stabilization approach includes necessary upgrades for occupancy, such as restroom upgrades, fire sprinkler upgrades, and ventilation system upgrades. This does not necessarily imply replacement of existing systems. In the restoration approach, the existing systems are to be removed and replaced with new systems throughout.

8- Electrical:

The stabilization approach includes necessary upgrades for occupancy. This does not necessarily imply replacement of existing systems. In the restoration approach, the existing systems are to be removed and replaced with new systems throughout.

9- Conveying:

In the stabilization approach there are no improvements to current conditions, which provide limited accessibility to the various floors. In the restoration approach, an elevator is integrated into the existing building to provide full access to all floors.

Finally, we have included as a supplement to Option A (Restoration) for the Main House and Carriage House an estimate of probable additional costs by use. Differing uses require differing approaches. For example, an office use will require substantial communication and networking options while a restaurant will require high end commercial kitchen equipment and mechanical systems. All uses may not require the full extent of

structural upgrades that have been outlined. However, to be consistent and to understand rough order costs, all use categories include the highest recommended structural upgrades.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