

CASTLE GREEN
FIRE PROTECTION AND LIFE SAFETY

APPEAL APPLICATION FOR
STATE HISTORICAL BUILDING SAFETY BOARD



SUBMITTED TO:
THE STATE HISTORICAL
BUILDING SAFETY BOARD

APRIL 23, 2008

PREPARED FOR:
CASTLE GREEN HOA
99 S. Raymond Avenue
Pasadena, CA 91105

PREPARED BY:
HERITAGE ARCHITECTURE & PLANNING

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I. INTRODUCTION

The Castle Green is a qualified historical building that is listed on the National Register of Historic Places. The building is located at 99 South Raymond Avenue in downtown Pasadena, California. The Castle Green was an expansion of the Hotel Green that was built on the east side of South Raymond Avenue and connected to the Castle Green by a bridge that spanned South Raymond Avenue. (Refer to Photo #1) The building is a six-story structure with a single level basement, an original seventh floor glass solarium, and two large roof decks. The hotel transitioned to ownership by the tenants in 1924. The current owners have formed the Castle Green Homeowners Association.

The building was constructed as a “fireproof” building in 1898. The general building construction consists of a steel frame with concrete floor and roof slabs. The exterior walls are brick construction with interior and exterior plaster. The interior walls are a unique single wall construction technique with a solid gypsum plaster material that is approximately two and one quarter (2 ¼) inches thick with black iron channels and wire mesh for support.

Heritage Architecture & Planning was retained by the Castle Green Homeowners Association in 2005 to provide a fire protection and life safety analysis of the existing building. As part of this study, Heritage consulted with Schirmer Engineering, a fire protection company, to review existing documents, research the building records, complete a code analysis of the building, and make recommendations for the protection of the residents that live in Castle Green, guests of the Castle Green, as well as the protection of the historic fabric of the building.

Research was completed at the Pasadena Building Department, the Pasadena City Clerk’s Office, and the Pasadena Fire Department. Historical research was also performed for this study. A copy of the National Register Nomination Form for Hotel Green is included in the Appendix. The existing conditions at Castle Green were investigated and recorded with drawings and photographs. Building codes were verified and checked against the existing conditions at the building.

The Fire Protection and Life Safety Study was presented to the Pasadena Fire Department in 2006. The study concluded that the Castle Green building does have some deficiencies related to fire protection and life safety. The study outlined two options for adequately improving the fire protection and life safety of the building. The first option was a series of code-required upgrades to improve the compliance of the existing building to better align with current codes. The second option is the installation of a limited area fire sprinkler system covering a majority of the building, but not the main assembly spaces on the first floor. While installing an automatic fire sprinkler system is not required by code, a limited area automatic fire sprinkler system would improve the fire protection and life safety for occupants and the property and would supersede the need for some of the code upgrades otherwise required. The study concludes that with a limited area fire sprinkler system and the use of other approved alternatives measures as permitted by the California Historical Building Code (CHBC), the fire and life safety of occupants, guests and fire personnel at the Castle Green can be attained.

The City of Pasadena Fire Department does not agree with the conclusions of the Study and has stood firm in demanding installation of a full coverage fire sprinkler system at the Castle Green. The Pasadena Fire Department recognizes that Castle Green is an historic and concedes that compliance with current fire safety code requirements will demolish the historic fabric and change the character and feeling of the interior of the building (see Pasadena Fire Department letter dated January 23, 2008 attached, Appendix A.) The Homeowner Association, Dale Pelch, an attorney for the Homeowner Association, Heritage Architecture & Planning, the Pasadena Fire Department, and Frank Rhemrev, (an assistant City Attorney for the City of Pasadena) have met several times in the last year to find an agreeable alternative solution for the protection of the Castle Green. Since no solution was found that was acceptable to all parties, it was mutually agreed that the issue be submitted to the State Historical Building Safety Board for a decision.

II. HISTORICAL SIGNIFICANCE

National Register of Historical Places

The Castle Green is a qualified historical building listed on the National Register of Historic Places and in the City of Pasadena as one of only four buildings listed as a City Historical Treasure. The National Register Nomination notes the imaginative and eclectic style of the exterior design of the building by Architect Frederick I. Roehrig. The interiors are stated to retain their late nineteenth century style. The public rooms on the ground floor remain nearly in their original condition from 1898. The National Register and the City of Pasadena concur that the Castle Green is historically significant for the exterior and interior features as noted and discussed in the National Register of Historic Places Nomination Form.

The National Register of Historic Places Nomination Form is attached in the appendix.

History of Castle Green

The Hotel Green complex involved three distinct construction phases. First, the Hotel Green (originally the Webster Hotel, demolished in 1935¹) was constructed in 1887 at the southeast corner of Raymond Avenue and Green Street in Pasadena, California. Second, The West Annex was built (now known as Castle Green, located at 99 South Raymond Avenue) located on the opposite side of Raymond Avenue and linked to the original building with a pedestrian bridge. Third, the 1903 North Annex to Hotel Green, was built, located along Green Street, which was intended to be a modern complement to the existing Hotel Green complex. It was “connected at a right angle to the Castle Green and was adjoined to another existing building that was refurbished...”² previously known as the Wooster Block.³

Although the Hotel Green opened in 1899, the history of the building actually began a decade earlier in 1887.⁴ The Webster Hotel, construction beginning in 1887, was located near the Santa Fe Railroad station in Pasadena, California. In spite of this profitable location, the owner was forced to sell the unfinished hotel to Colonel George G. Green, recently arrived from New Jersey, and “...within a few years, it had gained the reputation of being one of the finest hotels in southern California.”⁵ Construction of Castle Green, the West Annex for the Hotel Green, was completed in 1898 and the new facility was opened to the public in 1899.⁶ The hotel “became the social center of Pasadena...”⁷ during the city’s “grand resort era”⁸ of the early 1900s.

¹ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

² Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

³ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

⁴ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

⁵ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

⁶ Castle Green Homeowners Association. www.castlegreen.com

⁷ Castle Green Homeowners Association. www.castlegreen.com

⁸ Hotel Green postcard reproduction

Architect Frederick I. Roehrig merged Moorish, Spanish, and Victorian influences creating a unique architectural style⁹ appropriate for seasonal guests who “found the fanciful mingling of styles to be appropriate to their surroundings.”¹⁰ At the time of construction, Castle Green was connected to the original Hotel Green with an enclosed pedestrian bridge over S. Raymond Avenue providing comfortable and convenient access as well as “an important social promenade and a lounge for guests.”¹¹ Two domed towers, accessible from the roof deck, flank the main entrance and bridge. In addition to its unique architectural style, the building is also noteworthy in its method of construction. Structural steel framing, brick exterior walls, concrete floors, and solid gypsum plaster interior walls established Castle Green as the first “fireproof” building in Pasadena.¹² As constructed in 1899, the Castle Green meets modern code requirement for Type II-A construction.

Castle Green provided more to the community than income from long-term guests. Set back approximately 100 feet from Raymond Avenue, Castle Green included an exterior space between the buildings and “the newly landscaped site was the only park in Pasadena at that time.”¹³

The interior features match the quality, craftsmanship, and character of Castle Green’s exterior features. Gathering and recreation spaces for the guests include the penthouse, which was built as a solarium and used as a ballroom, the basement bowling alley, “a large lobby, drawing rooms, a sun porch, a billiards hall, a gentleman’s writing room, and . . .a suite of ‘Moorish’ rooms”¹⁴ on the ground floor. While many hotels focused on the public spaces, Castle Green guest rooms were large and included “individual closets, baths and lavatories.”¹⁵

By the 1920s, the newly popularized automobile superseded a key selling point: the convenient location of Hotel Green to the Santa Fe Railroad station. As a result, the “hotel began to lose the great popularity it had enjoyed.”¹⁶ The West Annex was renamed Castle Green in 1926,¹⁷ when the property was purchased by a “group of regular hotel guests who wished to continue to come to the Hotel Green”¹⁸ after the resort closed its doors. Made up of individually owned units, Castle Green remains in use today as a condominium. The original Hotel Green building was demolished in 1935 and the North Annex remained as Hotel Green until 1971 when it became Hotel Green Apartments.

⁹ Castle Green Homeowners Association. www.castlegreen.com

¹⁰ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

¹¹ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

¹² Castle Green Homeowners Association. www.castlegreen.com

¹³ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

¹⁴ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

¹⁵ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

¹⁶ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

¹⁷ Pasadena Heritage. *National Register of Historic Places Inventory – Nomination Form: Hotel Green*. September 1979.

¹⁸ Castle Green Homeowners Association. www.castlegreen.com

Since its privatization in 1924, Castle Green has faced numerous challenges in maintenance and continued use; most prominently fire and life-safety upgrades. A fire escape was added to the south end of the building in 1945 and windows were converted to doors on the 3rd, 4th, and 5th floors and existing door swings were reversed on the 2nd and 6th floors providing emergency egress routes for the residents.¹⁹ In 1956, a fire door was added to the landing between the first and second floors of the rear (North) stair.²⁰ The stairwells were enclosed and fire doors were added in 1981²¹ and, by 1982, the fire alarm system was complete,²² including automatic notification to the fire department.

Much of the historic fabric of the building exterior remains unchanged and the interior spaces have been tastefully restored following The Secretary of the Interior's Standards. Public spaces on the ground floor, such as the lobby, ballroom, and salons, continue to function as gathering spaces as originally designed. The hotel rooms on the upper levels are now living units utilizing the same walls and spaces as permitted in the 1920s conversion to owned co-op apartment units.

¹⁹ Castle Green Apartments Correspondence Archive

²⁰ Castle Green Apartments Correspondence Archive

²¹ Castle Green Apartments Correspondence Archive

²² Castle Green Apartments Correspondence Archive

III. FIRE PROTECTION AND LIFE SAFETY

EXISTING BUILDING ANALYSIS

General Building Description

Castle Green is a six story structure with a single level basement, a seventh floor penthouse, and two large roof decks. The building is approximately 100 feet wide by 230 feet long on the first level. The second level and above is approximately 50 feet wide by 215 feet long. The overall structure is nearly 95 feet tall from adjacent grade to the peak of the turret roofs.

The total gross building area is 82,409 square feet. A summary of the gross building area by floor is shown below.

Basement	11,233 sq. ft.
First Floor	12,974 sq. ft.
Second Floor	12,697 sq. ft.
Third Floor	10,676 sq. ft.
Fourth Floor	10,663 sq. ft.
Fifth Floor	10,650 sq. ft.
Sixth Floor	10,398 sq. ft.
Penthouse	3,118 sq. ft.
Total Gross Building Area	82,409 sq. ft.

The historic elevator, original to the building, is located on the east side of the building opposite the main central stairway. (Refer to Photo #3). The elevator runs from the basement to the penthouse level, i.e. the seventh floor. Due to the historic elevator gates, in lieu of solid doors, the elevator shaft is open to all floors, except the seventh floor which has doors to the shaft. The elevator also has windows in the elevator shaft which open to the exterior of the building. The elevator must be run by an operator as it is manually stopped at each level. An elevator operator is present at the building at all times. This allows some control over the number of people that visit the upper levels.

The elevator equipment is located in the basement adjacent to the elevator shaft. The equipment "room" is separated from the basement and elevator shaft by a chain link fence. The area is accessed by means of a chain link fence gate. There are no walls that separate the elevator equipment from the adjacent spaces or the elevator shaft.

The basement floor is partially below grade. The finish floor of the basement is about seven feet below grade. The basement is currently used for storage with two small offices, one office condo, the laundry room, men's restroom, elevator equipment and basement utility rooms. There are two exits from the basement.

The first floor is about four feet above grade. The majority of the first floor area is used for assembly. The assembly spaces include the Sunroom, Moorish Room, Turkish Room, Grand Salon, Lobby, Library, and Ballroom. (Refer to Photos 2 - 7). These assembly spaces are consistent with the original hotel uses. There are five office condo units located at the north end of the first floor. There are four public exits from the first floor. Three of the office condos facing the front of the building also have direct exits to the exterior.

The upper floors contain only residential units. There is a double-loaded corridor that runs the length of the building in the north south direction. The corridor is nine feet wide at the second through fifth floor and seven feet six inches wide at the sixth floor. (Refer to photos 8 – 9) The main stair divides the corridor into approximately one third to the south and two thirds to the north. There are two exit stairs in the corridor, the main stair to the south and a smaller stair toward the north end. Two additional exit ways lead to exterior metal fire escapes located at the far north and far south end of the corridor. (Refer to photo 21) A third fire escape is accessed from the main stair's intermediate landings at floor one through six.

The second floor consists of nine residential units. There are two larger units south of the main stair and seven units north of the main stair. The second floor also has the bridge and tower that previously led to the original Hotel Green across the street. This bridge and tower space is currently used as offices by the owners. There is only one egress from this space that leads back to the central corridor on the north side of the main stair.

The third through the sixth floors are very similar in design and layout, although the sixth floor corridor is narrower than the lower floors. Each floor has nine residential units. There are two larger units south of the main stair, with three doors opening directly to the corridor, and seven units north of the main stair. The differences from floor to floor are only within the units themselves. Some units are configured slightly differently, but all corridors and exit ways are the same on floors three through six. All residential units, except for the two-bedroom unit on the second floor, are studios or one-bedroom units.

The penthouse, or seventh floor, is different from all the other floors. There is only one residential unit at this level. The unit is located at the center of the building, just north of the main stair. The unit is located in the former historic rooftop solarium. There is a rooftop deck to the south of the main stair that is accessible only by the elevator and main stair. There is also a rooftop deck on the north side of the penthouse unit that is only accessed through the penthouse. (Refer to Photo #10 and 11).

Building Construction

Castle Green was constructed as a “fire proof” structure using concrete, steel, brick, plaster, and unique single wall solid gypsum plaster interior walls. There was no wood framing used in the original building construction. This structure was deemed a progressive building for fire prevention in the late 1880s and early 1890s. The intent of the building's method of construction was to mitigate the potential danger of fire in this seven-story hotel structure.

The general building construction consists of a steel frame with concrete floor and concrete roof slabs. The exterior walls are brick construction with interior and exterior plaster. The interior walls use a single wall construction technique with a solid gypsum plaster material that is approximately two and one quarter inches thick. The gypsum plaster is supported by black iron channels with wire mesh concealed within the wall. (Refer to Photos 25 – 26). The building construction type is considered a **Type II-A** in the current 2007 California Building Code. Some aspects of the building design exceed the requirements of a Type II-A structure.

The basement floor is a concrete slab on grade. The basement walls consist of concrete and brick walls that are partially under the exterior grade level. All steel beams located throughout the structure are covered by plaster or concrete and masonry. The first floor ceilings are historic plaster that is highly ornate and decorative. (Refer to Photo #12). The upper floors all have plaster ceilings that are simple and flat, except at the corridors which are coved. The plaster ceilings are solid gypsum plaster approximately one and one-half inches thick. (Refer to Photos # 18 - 19).

The existing doors are generally 1 ¾ inches thick wood panel doors. Most doors are historic and date back to the original period of construction. There is a series of non-historic, solid core doors in steel frames that were added to enclose the stairwells at each floor level. The windows are mostly double hung wood windows. A large majority of the windows are historic and date back to the original period of construction.

The roof surfaces are generally flat roof decks constructed in concrete and topped with a waterproofing membrane. The tile roofs are actually metal roof tiles that give the appearance of a clay mission tile roof. The roof at the penthouse unit is the original glass roof built over light gauge steel trusses that have been modified for water and sun protection. The roofs at the veranda and bridge are red clay tile.

Occupancy

The building occupancy can be divided into three major uses: assembly (A-3), residential (R-1), and office (B). In addition, there are some storage spaces in the basement (S-1). The Building Occupancy Plans in the Appendix show the breakdown of the square footage, load factors, and occupant loads for each area. A summary is shown below.

OCCUPANT LOAD SUMMARY

	<u>Current</u> <u>CBC Code</u>	<u>Non-event (most days)</u> <u>Actual Usage</u>
Basement	56	6
First Floor	834	11
Second Floor	49	13
Third Floor	38	14
Fourth Floor	38	12
Fifth Floor	39	12
Sixth Floor	37	14
Penthouse (Seventh)	21	3
Total Building Occupant Load	1,112	85

The majority of the occupant load is located on the first floor as that floor has large assembly spaces. The total occupant load above the first floor equals 222 occupants. This occupant load count includes the second through the sixth floor and the penthouse. The basement is mostly storage along with some office occupancy and has a total occupant load of 56 occupants. The Castle Green hosts an average of 80-90 public events annually, averaging 161 guests and 16 event staff people per event. These public events only take place on the first floor and exterior grounds.

BUILDING CODE ANALYSIS

Building Codes

Castle Green (originally known as the West Annex of Hotel Green) is listed on the National Register of Historic Places and is a qualified historical building eligible for the use of the California Historical Building Code (CHBC). The 2007 California Building Code (CBC), known as the “regular” code, and the 2007 California Existing Building Code (CEBC) are also used in this study in order to evaluate the extant construction and historic issues related to this property.

Use and Occupancy

The California Historical Building Code (CHBC) in section 8-102.1.4 states that a “Qualified historical building or properties may have their existing use or occupancy continued if such use or occupancy conformed to the code or to the standards of construction in effect at the time of construction, and such use or occupancy does not constitute a **distinct hazard** to life safety as defined in the CHBC.” The term “distinct hazard” is defined in the CHBC section 8-201 as “Any clear and evident condition that exists as an immediate danger to the safety of the occupants or public right of way. Conditions that do not meet the requirements of current regular codes and

ordinances do not, in and of themselves, constitute a distinct hazard. Section 8-104.3, CHBC Appeals, remains applicable.” **No distinct hazards are extant at the Castle Green.**

In the CHBC section 8-201, an “imminent threat” is defined as “Any condition within or affecting a qualified historical building or property which, in the opinion of the authority having jurisdiction, would qualify a building or property as dangerous to the extent that the life, health, property or safety of the public, its occupants or those performing necessary repair, stabilization or shoring work are in immediate peril due to conditions affecting the building or property.”¹ **No imminent threats are extant at the Castle Green.**

The use and occupancy of the building was historically as a residential hotel. This is considered a Residential Group R-1 occupancy. The first floor was used for assembly spaces and lounges (Assembly Group A-2 and Assembly Group A-3 occupancy), as well as offices (Business Group B occupancy). The basement was used as storage (Storage Group S-1 occupancy), with some offices (Business Group B occupancy), and a bowling alley (Assembly Group A-3 occupancy). The penthouse/seventh floor was used as roof deck gardens and had an enclosed space that was originally used as a solarium and ballroom. The roof deck gardens and solarium would have been considered assembly spaces (Assembly Group A-3 occupancy).

The current occupancy of the building is residential for home owners, Residential Group R-3. This has been the current use of the building since 1926 when it transitioned from a hotel. The first floor is still used as assembly spaces and lounges (Assembly Group A-2 and A-3 occupancy), and offices (Business Group B occupancy). The basement is still used for storage (Storage Group S-1 occupancy), some offices (Business Group B occupancy), and a laundry room. There are no longer assembly spaces in the basement. The roof deck on the south side is now limited by the Homeowner’s Association to a maximum occupancy of ten according to current code requirements. This is due to the single exit that is accessible from the roof deck. The original solarium is now used as a penthouse single residential unit with the roof deck to the north as a private roof deck from the penthouse unit.

The only change in occupancy on the upper floors has occurred at the seventh floor penthouse unit. The room was originally a solarium, which is classified as Assembly Group A-3 occupancy. The current use is a single residential unit, which is classified as Residential group R-3 occupancy since 1937. In the Uniform California Existing Building Code (CEBC), Chapter 9 discusses the provisions for the change of occupancy. Following the hazard categories set in this chapter (Tables 912.4, 912.5, and 912.6), the occupancy change from A-3 to R-3 does not constitute a change to a higher hazard group. **Per the CHBC and the CEBC, the existing uses are allowed for continued use in this building.**

¹ California Building Standards Commission. *2007 California Historical Building Code*. 2007.

Occupancy Separation

The required occupancy separation for new construction between any assembly occupancy and any residential occupancy or storage S-1 occupancy for buildings not equipped with an automatic sprinkler system is two hour per the California Building Code (CBC), Table 508.3.3. The existing building is classified as a Type II-A structure. The floor/ceiling assemblies are concrete slab construction that meet a two-hour rating. The CEBC includes a section on The Guideline for Fire Ratings of Archaic Materials and Assemblies. The floor/ceiling assembly noted in Item Code # F/C-3-RC-2 calls out a 3 1/4 inch thick concrete deck with plaster under the deck and has a fire rating of two hours. **The existing construction complies with the occupancy separation requirement as set forth in the CBC.**

Wall Construction

The exterior wall construction currently does conform to the CBC requirements in Chapter 6 and Table 601. The exterior bearing and non-bearing walls for a Type II-A construction type are required to be rated at one-hour and built of non-combustible material. The exterior walls are built with non-combustible materials of brick with a plaster finish on the interior and exterior sides. The CEBC Table 1.1.5 lists item code # W-10-M-1 lists a ten-inch masonry wall with plaster on both sides rated as a four-hour fire rated wall. The CBC, Table 720.1(2), list item #1-1-1 with six-inch solid masonry walls as a four-hour fire rated wall. **The existing masonry walls comply with the CBC requirements for one-hour rated exterior wall construction.**

The CEBC includes a section on The Guideline for Fire Ratings of Archaic Materials. Based on this data, the single wall construction of gypsum plaster is very similar to Item Code # W-2-M-1 which is shown as 1 1/4 hour rated construction. **The existing interior walls comply with the CBC requirements for one-hour rated interior wall construction.**

Building Floor Area

The allowable building floor area currently complies with the CBC, Chapter 5. The CBC states, in Table 503, that a Type II-A structure for an occupancy of Residential Group R-3 shall have an unlimited area. Table 503 for a Type II-A structure with an occupancy of Assembly Group A-2 and A-3 shall have a maximum area of 15,500 square feet. A Business Group B occupancy is allowed a maximum of 37,500 square feet. A Storage Group S-1 occupancy is allowed a maximum of 26,000 square feet. As defined in the CBC section 508.3.1.2, Allowable Area and Height for Mixed Use and Occupancy, the allowable area of a building shall be determined by the main occupancy in the building. The main occupancy of the building is Residential Group R-3. **The total area for the structure, not including the basement, is 71,176 square feet. This complies with the CBC floor area requirement for allowable building floor area.**

Building Height

The allowable building height and number of stories does not comply with CBC Chapter 5. The CBC states, in Table 503, that a Type II-A for an occupancy of Residential Group R-3 structure may have a maximum height of four stories. The CHBC notes in Section 8-302.5 that “The maximum height and number of stories of a historical building shall not be limited because of construction type, provided that such height and number of stories does not exceed that of its designated historical design.”

The existing height of approximately eighty five (85) feet and the existing seven stories is the designated historical design as noted in the National Register Application. Refer to the Appendix for the National Register forms. **The existing building height complies with the CHBC.**

Building Egress

Egress from the building is adequate or above adequate at most locations. Refer to the Appendix C for the Building Occupancy and Egress Plans that show the points of egress. The plans also show some deficient areas that can be corrected.

At the basement level, there are two means of egress. The main exit leads up a flight a stairs that are approximately six feet six inches wide and lead to the first floor rear exits. The second exit is at the north end of the building and leads up a flight of stairs that are approximately three feet ten inches wide. This stairway leads to an exit door at the rear of the building. **According to CBC current code requirements, basement egress is more than adequate for the occupant load of forty-four (44) occupants in the basement.**

The first floor has four main exits. This floor also has the highest occupant load for the building. The maximum occupant load of the first floor is eight hundred thirty four (834) occupants. The main ballroom has a maximum occupant load of four hundred seventy (470) people. The ballroom has two points of egress, one to the north and one to the south. The one exit to the north leads from a 10-foot wide corridor to a stairway that is approximately three feet three inches wide. At this north end corridor creates a dead end corridor that is nearly forty feet in length. The south exit is through the nine-foot wide corridor that leads to the lobby. At the lobby, there are two main exits to the east and west that lead directly outside and a third exit through the Sunroom.

The lobby areas include six main rooms; main lobby, library, Grand Salon, Turkish room, Moorish room, and the Sunroom, which is the only room separated by doors. The total occupant load of these six rooms is three hundred thirty one (331) occupants. These rooms have direct access to three exits. The two main exists from the lobby lead to the east and west of the building. The third exit is through the Sunroom and leads out to the south end of the building. **The first floor spaces are compliant with current CBC egress requirements, except at the dead end corridor to the north and the separation of exits and egress from the ballroom.**

The second through the sixth floors have very similar egress patterns. The average occupant load per floor is twenty-five occupants. The exit corridor is approximately nine feet wide, seven feet six inches at the columns and sixth floor. There are four exits on each floor with a fifth exit at the main stair's intermediate landing fire escape. The main stair is located toward the south end of the building and a second exit stair is located toward the north end of the building. The main stair is separated from the corridor at each level by a single door on each side. The north stair is separated at the upper floors, but is currently open to the corridor at the second floor. Two exits leading to fire escapes are located at the far north and south end of the corridors. The north exit leads through a hallway that is three feet four inches wide and out through a door to the fire escape. The south exit leads through modified windows out to the fire escape that leads down to the south end of the building.

The second floor has a connection bridge that originally crossed over S. Raymond Avenue to the former Hotel Green across the street. The bridge across the street has been removed, but a portion still remains. The bridge and tower room extend approximately one hundred twelve (112) feet from the corridor at the second floor. This creates a long space that has an occupant load of fifteen (15). The bridge is divided in half, with one office in the east half of the tower about fifty feet deep, and six cubicles arranged in an open plan in the west half leading to the corridor. The section of corridor that leads to the bridge and tower is over ten feet wide and longer than twenty feet, which creates a dead end corridor. The HOA has limited the use and occupancy of the bridge to only homeowners and a maximum of ten occupants. **The second through sixth floors comply with current CBC egress requirements with the exception of the dead end corridor at the bridge.**

The seventh level, or penthouse level, has one main exit at the main stairway and one via the north fire escape. The occupant load at the seventh floor penthouse unit is eighteen (18). The main stair leads up to the penthouse lobby as well as allowing access to the south roof deck. The south roof deck also has a narrow fire escape stairway that is adjacent to the main stairway on the exterior. The fire escape stairway does not provide adequate separation of exits for the south roof deck and the fire escape stairway platform is too narrow to comply with code requirements. The north roof deck, which is accessed only through the penthouse, has a fire escape stairway at the far north end. This fire escape stairway connects to the exits from floors two through six at the north end of the corridors and to the ground. The south fire escape to the sixth floor is code compliant, although it does not extend to the seventh floor south roof deck. **The penthouse and north deck comply with current CBC egress requirements. The south deck has only one compliant exit and is limited by the Homeowner's Association to a maximum of ten (10) occupants.**

Shaft Enclosures

The Castle Green building has three major shafts that run vertically through the building. The three shafts are the elevator shaft located on the east side of the building, the main stairway located on the west side of the building opposite the elevator shaft, and the north stair that is located on the west side of the building.

The elevator shaft, as discussed earlier, is open from the basement to the sixth floor. The penthouse or seventh floor is separated from the elevator shaft by solid doors at that level. The historic elevator has an open metal gate instead of solid doors and there is no elevator vestibule at each floor level. (Refer to Photo # 3). The elevator shaft is open to the corridor at all floors including the basement, except at the penthouse level.

The main stair is an open stairway that runs from the basement up to the penthouse or seventh floor. This is the original stair as it was constructed in 1898. There are no enclosures at each floor landing and the center of the stair is an open shaft that runs vertically from the first floor to the top of the stairway at the penthouse. (Refer to Photo #9). The basement is separated from the first floor by solid doors that are located on the mid-landing between the first floor and the basement. The penthouse also has solid doors that separate the stairway from the entrance to the penthouse.

The north stairway was originally constructed as an open stairway. This stair connects the basement to the sixth floor but does not extend up to the north deck of the roof level. This stair has been altered with new walls and solid doors to enclose the stairway at each floor level. The only exception is at the second floor where the stairway extends out to the corridor wall and could not be enclosed without extending the enclosure into the corridor. The stair was left open at this location. **The elevator shaft and main stair shaft do not comply with current code requirements.**

Life Safety Upgrades

The existing building has experienced numerous upgrades for fire protection and life safety. The fire escape stairways were added to the north and south end of the building in the 1940s. A third fire escape stairway was added outside the main stair and is accessed from the window at the mid-landings of the stairs. (Refer to Photo #21).

The main stairway was enclosed from the corridors at the upper floors in the 1980s. Solid core doors were installed that separate the stairway from the corridors. The main stair is not separated from the lobby at the main entrance. The smaller north stairway was enclosed by adding walls and solid core doors to separate the stairway from the corridors at each level. This stairway does not have separation from the corridor at the second floor due to the location of the stairway as it meets the corridor.

A fire alarm and smoke detection system, that included notification when activated, was installed throughout the building in the 1980s. (Refer to photos 22 - 24). This system includes pull stations throughout the building, an alarm bell on each floor level, and smoke detectors on each floor level. One fire sprinkler head was added to the enclosed trash closets on each floor. These sprinkler heads are connected directly to the domestic water system. Fire extinguishers have also been added to be code compliant throughout the building.

Other life safety improvements include the addition of self-illuminated exit signs at the ground floor assembly spaces. This complies with code required signage for exits at the main assembly spaces located on the first floor.

Fire Sprinkler System

The Pasadena Fire Department has a long documented history of discussions with the owners of Castle Green about the desire to add an automatic fire sprinkler system for the building. The current Pasadena Municipal Code does not mandate that a fire sprinkler system be installed at the existing Castle Green building. The Pasadena Fire Department has notified the HOA about non-compliance with the City of Pasadena Municipal Ordinance, Title 14: Section 14.25.030.D which required that all buildings at least five stories or seventy five feet in height be retrofitted with an Automatic Fire Extinguishing System. Upon researching this ordinance, it was determined that the Ordinance section quoted does not exist in the current Pasadena Municipal Ordinance. The Pasadena City Clerk's Office has confirmed that **the ordinance quoted was repealed in 1996** and is no longer a part of the Pasadena Municipal Code.

The CBC, Section 403.2, requires new construction of high-rise buildings to have an automatic fire sprinkler system. Existing high-rise buildings, Section 3412.27 in the CBC, are required to have an automatic fire sprinkler system only for construction types Type II-B, Type III-B, and Type V-B. **The Castle Green, complying with Construction Type II-A does not require an automatic fire sprinkler system per Section 3412.27 of the CBC.**

The Pasadena Fire Department has stated that Castle Green is a "Distinct Fire Hazard" and is therefore required to have an automatic fire extinguishing system provided. The California Historical Building Code states that "The intent of the CHBC is to preserve the integrity of qualified historic buildings or properties while maintaining a reasonable degree of fire protection based primarily on the life safety of the occupants and firefighting personnel." (Section 8-401.2, CHBC) Chapter 8-4 in the CHBC discusses fire protection. Section 8-410 addresses Automatic Sprinkler Systems. This section states, "Every qualified historical building or property which cannot be made to conform to the construction requirements specified in the regular code for the occupancy or use, and which constitutes a distinct fire hazard (for definition of "distinct hazard," see Chapter 8-2), shall be deemed in compliance if provided with an automatic sprinkler system or a life safety system or other technologies as approved by the enforcing agency."

A distinct hazard is defined in the CHBC as "Any clear and evident condition that exists as an immediate danger to the safety of the occupants or public right of way."² An imminent threat is defined in the CHBC as "Any condition within or affecting a qualified historical building or property which, in the opinion of the authority having jurisdiction, would qualify a building or property as dangerous to the extent that the life, health, property or safety of the public, its occupants or those performing necessary repair, stabilization or shoring work are in immediate peril due to conditions affecting the building or property."³ **According to these definitions, there is no distinct hazard or imminent threat extant at Castle Green.**

Since the existing building conforms with the construction requirements for occupancy and use, and there is no "distinct hazard" present at the Castle Green, as defined in Chapter 8-2, then an automatic fire sprinkler system is not required to be installed per code.

² California Building Standards Commission. *2007 California Historical Building Code*. 2007.

³ California Building Standards Commission. *2007 California Historical Building Code*. 2007.

FIRE PROTECTION AND LIFE SAFETY UPGRADES

Code Required Upgrades

As determined by the previous existing building analysis and building code analysis, there are existing conditions that do not meet current code requirements. The following list denotes the known regular code deficiencies at Castle Green.

1. Emergency egress lighting
2. Egress signage on the upper floors
3. A dead end corridor at the first floor north corridor
4. A second legal egress from the Ballroom
5. A dead end corridor at the second floor east corridor to the bridge
6. Enclosure of the elevator machine room in the basement
7. Enclosure of the elevator shaft
8. Enclosure of the main stair shaft
9. Enclosure of the north stair shaft at the second floor
10. A fire alarm notification system with horns and strobes

A majority of these items can be upgraded to meet the current regular code requirements. The addition of emergency egress lighting and egress signage, modifications to eliminate the dead end corridors on the first and second floors, and enclosure of the elevator machine room in the basement can be completed with minimal impacts to the existing historic fabric of the building. The addition of second legal exit from the Ballroom and the addition of a new fire alarm system that includes a current notification system with horns and strobes will have a greater and potentially more significant negative impact on the historic fabric of the building.

A few items needed to meet the current regular Code requirements cannot be implemented without major impacts to the historic character and fabric of the Castle Green. The enclosure of the elevator shaft will dramatically change the character and feeling of the historic elevator. This would require adding a solid door in place of or behind the existing metal gates that are the original design of the 1898 elevator. In addition, the main lobby will be very difficult to change to meet this requirement while maintaining the historic character of the space. The elevator opens directly into the main lobby space at the first floor. The historic plaster ceiling, original tile flooring, all adjacent wood baseboards, crown molding and original wood trim would be directly affected by any change to the elevator in the lobby.

The enclosure of the main stairway would also cause a dramatic change to the original design and the character of the Castle Green. This is the original design and historic fabric from the original construction dating to 1898. The north stair has been modified where possible to enclose the stair but the second floor condition would require a large intrusion into the corridor to enclose the stair at this level.

Compliance with current regular code for fire protection and life safety requirements do conflict with the purpose of the CHBC to preserve Castle Green, a qualified historic building that is listed on the National Register of Historic Places. These changes will directly affect the character, look, and feeling of each space. Strict compliance with the current regular Code with regard to the enclosure of the elevator shaft, enclosure of the main stairway, and enclosure of the north stairway at the second floor level cannot be accomplished without destroying the historical character, look, and feeling of the Castle Green and each space that would be impacted. The CHBC recognizes and expressly allows alternative measures and technologies to be used in historical buildings to preserve the historical fabric and extant conditions while providing reasonable and adequate fire and life safety protection for occupants, guests and fire personnel.

A Limited Area Fire Sprinkler System

The Castle Green Homeowner's Association has discussed the option of a limited area, automatic sprinkler system to be installed in the building. This solution was a proposed compromise to the Pasadena Fire Department's request to install an automatic fire sprinkler system with 100% coverage in the building. This solution was proposed as an alternative to meeting all the current code requirements as was discussed in the previous section. The limited area, automatic sprinkler system was proposed to maintain the integrity of the historic fabric throughout the building but mainly in the first floor assembly spaces. The design and installation of the fire sprinkler system would be based on NFPA 13R, but will be considered limited due to certain areas not being covered or completely covered by the system.

The first floor assembly areas, the Sunroom, the Grand Salon, the Moorish Room, the Turkish Room, the Lobby, the Library, and the Ballroom all have ornate plaster ceilings that are directly applied to the concrete floor deck of the second floor. This does not allow for any concealed spaces for installation of the fire sprinkler system. A fire sprinkler system installed in these spaces will require that the entire system be exposed. The installation of an exposed fire sprinkler system in these spaces will directly impact the historic fabric of the ornate plaster ceiling as well as greatly impact the character, look and feeling associated with these spaces. Independent confirmation was obtained from two fire sprinkler companies to confirm this condition as requested by the Pasadena Fire Department.

In order to maintain the integrity of the historic fabric in the assembly areas on the first floor, an alternate design approach was suggested in lieu of providing an automatic sprinkler system. This alternate design approach would include computer fluid dynamics (CFD) modeling utilizing a National Institute of Standards (NIST) Fire Dynamics Simulator (FDS) to indicate that the higher ceiling heights (over fourteen feet), the number of exits, and proximity to exits will maintain an adequate level of tenability. The Pasadena Fire Department did not believe that this analysis would provide any information to allow for the approval of the proposed alternative.

The remaining areas in the building will have a limited area, automatic sprinkler system in accordance with NFPA 13R. The limited areas discussed included not providing a sprinkler head in

every closet and bathroom of each unit. The units are small and can be adequately covered with a minimal number of sprinkler heads. The limited system would have side throw heads that would cover only the kitchen and bedrooms where statistically the majority of residential fires start.

The basement, corridors, and stairways would receive full coverage as deemed feasible during the sprinkler design. Additionally, the fire sprinkler system will require a new fire service lead-in, backflow preventor, and fire pump. The fire pump will be sized in accordance to the sprinkler demand and the street pressure. A water storage tank would normally be required but will not be included as discussed and approved by the Pasadena Fire Department.

Alternative Code Required Upgrades

CHBC permits conditions that do not comply with regular Code requirements to remain in order to preserve the historic fabric and character of an historic building, provided approved alternative methods and technologies are implemented to achieve a reasonable degree of fire and life safety protection for occupants, guests and fire personnel. The following regular code upgrades could not be completed without destroying character defining features of the Castle Green.

1. Enclosure of the elevator shaft
2. Enclosure of the main stairway
3. Enclosure of the north stairway at the second floor
4. Addition of the second egress at the Ballroom .

A limited area fire sprinkler system, with the following upgrades and changes could be completed with minimal impact to the existing historic building and without destroying its historical character and fabric. These would include the following items.

1. Emergency egress lighting on all floors
2. Egress signage on all floors
3. Elimination of the dead end corridor at the first floor north corridor
4. Elimination of the dead end corridor at the second floor corridor to the bridge
5. Enclosure of the elevator machine room in the basement
6. Review of the existing fire alarm system for upgrades or replacement to allow adequate notification to all residents and guests.
7. A Fire Dynamic Simulator will be completed to determine whether the existing egress system is adequate and reasonably protects the safety of occupants, guests and fire personnel. If the Simulator results reflect that the system is inadequate, a second egress at the Ballroom will be provided

These proposed upgrades will allow for the increased fire and life safety protection of Castle Green while still preserving the historic character, look, and feeling of the interior spaces, especially the first floor primary spaces.

IV. REQUEST OF THE STATE HISTORICAL BUILDING SAFETY BOARD

The Castle Green Homeowners Association requests the following three determinations from the State Historical Building Safety Board.

- 1. The California Building Code does not require the installment of an automatic sprinkler system at Castle Green, a qualified historical building.**

It is the opinion of Heritage Architecture & Planning that there is no code requirement for an automatic sprinkler system to be installed at Castle Green under the applicable provisions of the 2007 California Building Code and the 2007 California Historical Building Code (CHBC) or any other State or local law of ordinance.

- 2. Alternative regulations, standards, and measures are available to address existing code deficiencies at Castle Green that will preserve the historic character and features of Castle Green, a qualified historic building and concurrently provide reasonable fire and life safety for the Castle Green.**

It is the opinion of Heritage Architecture & Planning that the following upgrades are required at Castle Green to mitigate the existing code deficiencies and continue the use of the property for public events. These upgrades can be completed with minimal impact to the historical fabric of the Castle Green.

- Provide emergency egress lighting throughout the building.
- Provide egress signage throughout the building.
- Eliminate the dead end corridors at the north corridor on the first floor and the east corridor to the bridge on the second floor.
- Provide a solid enclosure around the existing elevator equipment in the basement.
- Review the existing fire alarm system for upgrades or replacement to allow adequate notification to all residents and guests.
- Addition of a second egress at the Ballroom if the Fire Dynamic Simulator shows the egress as provided is not acceptable.

3. **The installation of a limited area, fire sprinkler system together with approved alternative measures represent a reasonable alternative to provide fire and life safety while allowing for the preservation of the historic character and features of the Castle Green.**

It is the opinion of Heritage Architecture & Planning that a limited area, fire sprinkler system, as defined in Section III, along with the alternative measures described below, provide the best solution for reasonable fire protection and life safety of the property and its occupants, guests and fire personnel while maintaining the historic character and preserving a qualified historical building that is listed on the National Register of Historical Places.

- a) Provide emergency egress lighting through out the building.
- b) Provide egress signage throughout the building.
- c) Eliminate the dead end corridors at the north corridor on the first floor and the east corridor to the bridge on the second floor.
- d) Provide a solid enclosure around the existing elevator equipment in the basement.
- e) Review the existing fire alarm system for upgrades or replacement to allow adequate notification to all residents and guests.
- f) Addition of the second egress at the Ballroom if the Fire Dynamic Simulator shows the egress as provided is not acceptable.