Starlight Bowl

Conditions Assessment & Feasibility Study

Prepared for
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SECTION I - INTRODUCTION

A. Purpose of the Report

This report is intended to provide a summary of the existing conditions of the Starlight Bowl and rehabilitation recommendations for re-opening the facility as a live performance venue. The primary goal of this study is to provide feasible recommendations to improve the acoustical environment in the bowl by mitigating airplane noise. In addition, this study provides architectural, structural, mechanical, plumbing, and electrical assessments and recommendations.

The proposed uses for the Bowl will include a variety of performances including:

Theatre

- Broadway musicals (locally produced and touring)
- Large touring children's shows
- Theatre performances (in the stage house)
- High school and college theatre festivals and competitions
- Comedians
- Revues
- Theatre spectacles (e.g. large scale Shakespeare)
- Historical dramas
- Theatrical pageants
- Variety shows (e.g. Chinese acrobats, pole walkers)
- Poetry slams

Dance

- Dance performances (large scale)
- Dance festivals/competitions
- Ethic dance spectacles
- Dance school recitals

Music

- Rock and pop concerts
- Contemporary Chinese concerts
- Music festivals (e.g. blues, folk, bluegrass, pop, jazz)
- Musical competitions
- Military band and marching unit performances (e.g. Blackwatch Guards)

Film

- Film screening
- Film festivals/competitions (animations, Comic-con, retrospectives)
- Film/TV shoots (advertising shoots, feature productions, television productions)

Special Events

- Graduation ceremonies
- Patriotic/community celebrations and memorials
- Awards shows

- Fundraising performances for community charities
- Large community convocations
- Church services, memorials, and meetings
- Conferences
- Television spectacles
- Spots events/competitions (boxing, gymnastics, wrestling, extreme sports)
- Beauty pageants
- Ethnic festivals (e.g. Chinese New Year, Divali Festival)

B. Preservation Objectives

The Starlight Bowl is listed as a contributor to the Balboa Park National Register Historic Landmark District. Rehabilitation of the bowl must therefore be completed in compliance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (*The Standards*).

C. Methodology

The architectural investigation is the critical first step in planning an appropriate treatment, determining the character-defining features, understanding how a building has changed over time, and assessing the levels of deterioration. The following steps were taken in the documentation process at the Starlight Bowl.

a. Review of Existing Documents and Historical Research

A review of information provided by the San Diego Civic Light Opera was conducted by Heritage Architecture & Planning (Heritage) and the consultant team. Available documentation included the following items:

- 1935 construction drawings.
- 1953 drawings for a ticket booth to be located in front of the Aerospace Museum (ticket booth has since been demolished).
- 1961 drawings for a wall and ticket booth to be located in front of the Starlight Bowl (the wall remains, but the ticket booth has since been removed).
- 1980 fire sprinkler drawings.
- 1981 accessibility improvement drawings.
- 1995 remodel drawings for the new fly loft and orchestra pit.

In addition to the available drawings provided by San Diego Civic Light Opera, Heritage has several historic photos of the bowl in our archive. Copies of the historic photographs are included for reference in Section II of this report.

b. Existing Condition Survey

Existing condition surveys were preformed by Heritage and the consultant team in February and March of 2013.

SECTION II – HISTORIC CONTEXT

The Historic Context of Balboa Park's Central Mesa
(Excerpted from the Balboa Park Central Mesa Precise Plan, Historic Context prepared by the City of San Diego Park and Recreation Department, adopted by the City Council on October 20, 1992.)

The Central Mesa Before the Exposition:
In 1868, 1400 acres of pueblo lands were set aside by San Diego City trustees for use as a public park. With this visionary step, Balboa Park came into existence as one of the largest urban parks in the Unites States. Through the years, citizens have struggled to preserve this precious tract of land for public park uses. The first major threat occurred in 1871 when a bill was introduced in the State Legislature to sell the property to private interests. After the bill's defeat, a new affirmation of its public ownership was framed and it stated in part, "these lands are to be held in trust forever…for the purposes of a free and public park and for no other different purpose." However, in less than ten years encroachments began. Parkland was used for a variety of non-park purposes such as a high school, children's home, a city pound, and a gun club.

Until the turn of the century, the Central Mesa remained in its natural state while other areas of the Park began to be planted with trees. Civic minded private citizens were responsible for much of the improvements in the Park during this period of time. In 1902, George Marston, acting on behalf of the Park Improvements Committee engaged the services of Samuel Parsons to develop a master plan for the Park. At that time, Parsons was the president of the American Society of Landscape Architects and a widely respected park planner. Upon his arrival in San Diego in December of 1902, Parsons was impressed with the Park's unique setting between a series of mountain ranges and the vast expense of the Pacific. His plan for the Park called for an informal, natural treatment that discouraged formal gardens and instead featured tree shaded canyons, open sunlit mesa tops, and pedestrian walkways the "crept along the brinks of the canyons and down across the slopes." The plan also discouraged the use of structures in the landscape in order to preserve the natural character of the site. During the following years, Parsons' plan for the Park began to be implemented on the West Mesa along Sixth Avenue.

On July 9, 1909 a comment made during a Chamber of Commerce meeting by G. Aubrey Davidson set in motion a chain of events that resulted in the 1915 Panama – California Exposition. Davidson wanted to promote San Diego's position as the west coast port closest to the Panama Canal. An Exposition would display San Diego's mild climate and abundant opportunities for commerce. The idea received broad-based community support and plans for the Exposition were begun.

In 1910, the Building and Grounds Committee selected the Olmested Brothers, Landscape Architects of Brookline, Massachusetts to develop a plan for the Exposition. The Olmsteds chose a site at the southern portion of the Park near the City in order to preserve the Central Mesa as open park. The architecture was to be a variety of California and Southwester vernacular styles, including Spanish, Mission, and Pueblo types.

In January 1911, the committee chose Bertram Goodhue as principal Exposition architect. Goodhue's area of expertise was the lavish Spanish Baroque style of architecture. Between January and September of that year, planning decisions were made that have shaped the uses of the Central

Mesa ever since. Instead of locating the Exposition buildings near the city, the committee opted to locate them on the Central Mesa where dramatic views of the ocean and mountains would reveal to visitors the natural wonders of the region. The new site enabled Goodhue and his associate Carleton Winslow to maximize the rich architectural vocabulary of the Spanish Baroque and create a fantasy city that manifested the grace and extravagance of old Spain.

Although the architecture was executed in a small scale and the landscape featured lush gardens, open plazas, and distant views, the Olmsted brothers were opposed the plan and resigned from the project. Goodhue's vision proved to be a resounding success, primarily because of the pleasing balance that was achieved between the architecture and the landscape. Count Salazar, Consul General of Spain, remarked to his hosts after his visit to the Exposition, "We have buildings in Spain just as beautiful, we have gardens just as fine, but nowhere in my country have I seen such a perfect blending of the two. You have out-Spained Spain!" Sensitive planning ensured that man-made environment struck a harmonious equilibrium with the works of nature that enveloped and permeated the Exposition site. The Exposition established the Central Mesa as a regional cultural center, a significant botanical resource, and the gem of San Diego's public wealth.

The 1915 Panama-California Exposition:

The buildings on the 1915 Panama-California Exposition are centered in the Prado area of the central Mesa. The ornate Spanish Colonial buildings were skillfully designed to integrate with gardens, promenades, and plazas. Together they create the atmosphere of a romantic, ideal Spanish city of the past.

With the exception of the Museum of Man, the Botanical Building, and the Organ Pavilion, these buildings were originally intended to serve as temporary structures that would be used only for the duration of the Exposition. Indeed, Bertram Goodhue forcefully argued the case for their demolition. He did not foresee, however, that the buildings he designed would touch such a deep chord of romance for an idealized vision of California's past. In fact, Goodhue's designs sparked a revival of Spanish Colonial architecture on the west coast and encouraged an increased interest in the use of architectural ornamentation. The Spanish Colonial revival also served as an inspiration to the deco movement which incorporated ornamentation into modernist forms.

The gardens and plazas of the 1915 Exposition contributed to the magical quality of the Prado as much as the architecture. The highly ornamental architecture conjured up the romance of Spain while the lush and exotic landscape evoked the feeling of a subtropical paradise in the midst of the desert of the American Southwest. Included in the Central Mesa landscape for the 1915 Exposition were large public plazas, shaded arcades and pergolas, a variety of formal gardens, an enclosed botanical building, a lathe building, informal expanses of lawn with views to the ocean, heavily vegetated canyons, small enclosed formal patios, and wide pedestrian promenades.

Clarence S. Stein, an associate of Goodhue who had trained at the Ecole de Beaux Arts in Paris, was responsible for the Exposition site plan. It was based on a central axis that began and ended with plazas, utilized a major plaza as a central focal point, and linked the three plazas with pedestrian promenades and arcades. The arcades also served as thematic linkages and entries to the Exposition buildings and gardens along the Prado. The site planning created a variety of plazas and open space areas that provided a pleasing rhythm and harmony of spatial experience.

Central Mesa Development Between the Expositions:
Three months after the close of the Panama-California Exposition, the United States declared war on Germany and the City offered the Exposition buildings to the government for use by the Navy. After the war, the majority of the buildings were in a sorry state of repair and the City made plans to demolish then and create formal gardens in their place as the Exposition designers had originally intended. San Diegans, however, had different ideas. An appeal went out to the public to renovate the buildings with the slogan "Cross the bridge and find yourself in another world." In 1922 the buildings were repaired using a combination of private and public funding.

During the 1920s, the Central Mesa's identity as a public park and cultural center began to develop. The cultural role of the Central Mesa was continued during this period as the San Diego Society for Natural History, the San Diego Museum, the San Diego Floral Association, the San Diego Zoological Society, and the San Diego Scientific Library took residence in the Central Mesa.

In 1925, John Nolen produced a plan for the Park, which recommended against further encroachments onto open park land and suggested the establishment of formal connections between the Park and the Bay.

George Marston, who had led the campaign to save the Exposition buildings five years earlier, wrote a letter to the San Diego Union which illustrates the planning issues that faced civic leaders during that dynamic period of the Park's history. "Our city charter wisely places general control of all park land under one body. There are already a score of corporations and societies that have a foothold in Balboa Park and there will be more in the future. Balboa Park is primarily a park to be cherished as a place of natural beauty. Although it is one of the largest parks in the country, the time is coming when the building of hospitals and school houses, or even libraries and museums must cease, or else we shall have a city there instead of a park."

In 1925, the city lost two Exposition buildings. The Sacramento Valley building at the north end of the Plaza de Panama was demolished to provide space for a new Fine Arts Gallery designed in the Spanish Renaissance style by William Templeton Johnson. The same year, the Southern California Counties Building burned to the ground (ironically on the night of the annual Fireman's Ball) and was replaced six years later by the Natural History Museum which was also designed by William Templeton Johnson.

The Exposition buildings were again threatened to be demolished by the city in 1933 due to the danger they posed to the public from falling cornices and parapets. Once again the structures were saved, this time largely due to the efforts of a citizen's group led by Gertrude Gilbert. The Federal Government, through the Reconstruction Finance Corporation, provided the majority of labor and funds for refurbishment and the local Chamber of Commerce raised the remainder of the monies required. This great community effort provided the catalyst for creating the California Pacific International Exposition in 1935.

As the building renovations were nearing completion in the spring of 1934, an idea was put forward to stage another World Exposition on the Central Mesa. The newly restored Exposition buildings would be put to their original use and also guide the design theme of the proposed event.

Despite the fact that the county was in the midst of the Great Depression, forward-thinking citizens began to solicit public support and raise the necessary financing. On July 27, 1934, the exposition corporation was formed. By September 19th, the financing goal had been surpassed by 100%.

Richard C. Requa, who had overseen the restoration of the original Exposition buildings, was appointed as director of architecture for the new project. Requa, like Bertram Goodhue, was a student of Spanish Architecture and had written a book describing the architectural details of Spain and the Mediterranean. The formidable task of designing and constructing the entire Exposition was accomplished in less than six months time. The California Pacific International Exposition opened on May 29, 1935.

The 1935 California Pacific International Exposition:

The California Pacific International Exposition of 1935 added several significant buildings to the Central Mesa. These structures are concentrated in the Palisades and Spanish Village areas of the Park. The architectural character of these buildings range from prehistoric American forms to architecture contemporary to the time of the Exposition. Richard Requa, the architect for the 1935 Exposition, intended the architecture of the Palisades area to provide a more complete history of Southwest architecture than the 1915 Exposition had achieved. A progression of architectural styles are displayed in the Palisades ranging from the Pueblo style of the Recital Hall, the Mayan style of the federal Building, a combination of ancient Mayan and 20th Century massing and ornamentation displayed by the Municipal Building and Automotive Museum, and finally an example of what was then the latest in modern industrial architecture – the Air and Space Museum. The Ford (Starlight) Bowl was also built at this time.

The specific intention for the House of Pacific Relations was to provide architecture at a personal scale that would be slightly off the beaten path between the Prado and Palisades and provide representatives of diverse nations an opportunity to meet in an atmosphere of tranquility and hospitality. In contrast, Spanish Village replicated the vitality of a southwestern Mercado filled with bustling activity of shopping, dining, and entertainment.

Exposition architect Richard Requa intended the landscape for the 1935 California Pacific International Exposition to harmonize with the existing landscape form the 1915 Exposition and to be a permanent addition to the Park. His intent was not to create a new landscape theme for the Park, but to enhance the existing landscape and contribute to the permanent character of the whole landscape composition. Requa retained the existing plazas and gardens in the Prado and created a new landscaped pedestrian plaza that covered the entire Palisades area. He designed a new central courtyard and garden for the newly remodeled House of Hospitality, and also redesigned and changed the name of the Montezuma Garden to Alcazar Garden. Other gardens in the Central Mesa that were original to the 1935 Exposition are the Zoro Garden and the House of Pacific Relations Central Courtyard (originally containing a pool and rock garden). In addition, a pedestrian bridge spanning Palm Canyon was installed. It has since been removed.

The Palisades was the major area of the expansion for the 1935 Exposition. According to Richard Requa, the central landscape element for the Palisades was a large open plaza reminiscent of those found in Latin American cities. The Exposition buildings were arranged around the plaza to display the progression of architecture in the southwest from prehistoric to modern times. The buildings

were sited formally on the southern terminus of the Palisades and were informally positioned on the northern end. The irregular configuration of the northern area complimented a wooded canyon that was located near the Federal Building where Presidents Way exists today. The Standard Oil Building, the Water and Transportation Building, and the Palisades Café framed the northern end of the Palisades open space and were removed after the Exposition. Requa designed the landscape treatment to provide color and adornment to the architecture and an "ever-changing pattern of natural beauty flung against backgrounds of unadorned wall masses."

The Ford Bowl

In addition to the Ford Building (now the Air and Space Museum), the Ford Motor Company sponsored the Ford Bowl, an open-air amphitheatre at the south end of the Palisades. Both structures are designed in the Streamline Moderne style to reflect the latest architectural trends of the time. The Bowl is characterized by the large plaster-clad shell which defines the stage area and contains the dressing rooms and storage spaces. The Bowl featured an open-air amphitheater with bench seating for an audience of over 3,000. During the Exposition, the Ford Bowl was the venue for a wide variety of musical performances, including choirs and symphonies. The structure later became known as the Starlight Bowl, operated by the San Diego Civic Light Opera.

Originally the bowl was open to the Palisades with a low wall separating the audience area from the the Palisades. In 1961 a taller wall was added at the top of the bowl along with a small ticket booth. Some time later the ticket booth was removed and replaced with a larger structure that contains the existing concessions stand, ticket office, lighting booth, and staff offices. The wall at the top of the bowl remains. Other changes included the addition of two free-standing restroom buildings and replacement of the seats. In 1995 the Bowl was remodeled to add a fly-loft in front of the historic amphitheater shell. The original shell is no longer visible from the audience area, but it remains largely intact behind the non-historic metal clad fly-loft structure.

Construction Chronology

1868 City of San Diego sets aside 1,400 acres for use as a public Park

1915 The Panama-California Exposition opens. New buildings constructed for the Exposition are centered in the Prado area of the Park.

1935 The California Pacific International Exposition opens in Balboa Park. New buildings are concentrated in the Palisades and Spanish Village areas of the Park. The Ford Motor Company builds two buildings in the south side of the Palisades, the Ford Building (now the Air and Space Museum) and the Ford Bowl (now Starlight Bowl).

1945 The San Diego Civic Light Opera is founded.

1961 A new wall and ticket booth are added on the top of the bowl.

1961-81 Sometime between 1961 and 1981 the box office building and the restrooms are added to the site, but the exact date is unknown.

1980 Fire sprinklers are added to the stage and backstage areas of Starlight Bowl.

1981 Accessibility improvements were made, including the addition of wheelchair seating spaces at the back of the bowl.

1995 The Starlight Bowl is remodeled to add a new steel-framed fly loft structure in front of the original shell and expand the stage.

2010 The San Diego Civic Light Opera has its last production in the Starlight Bowl.

Historic Photographs:

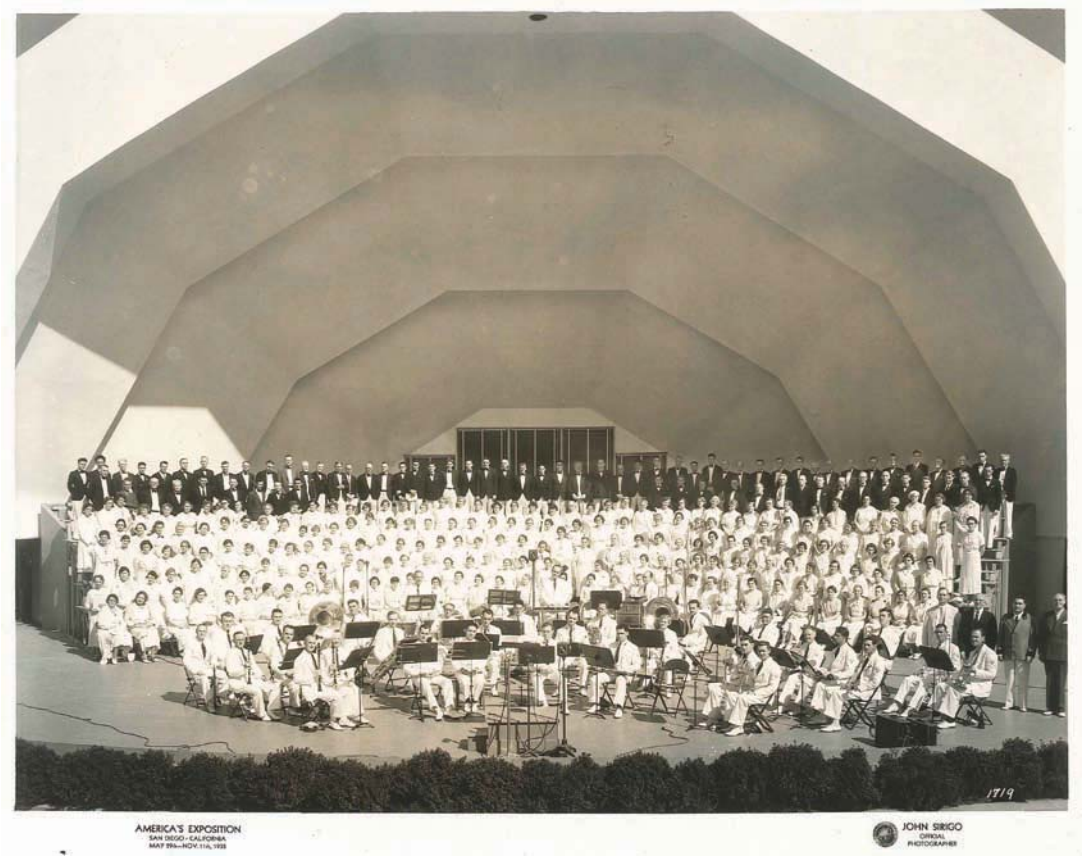


Photo H1 - Historic photograph of a performance in the Ford Bowl dated 1935.

Photo H2: The Ford Bowl, ca. 1935..

Photo H3: The Ford Bowl ca. 1935.

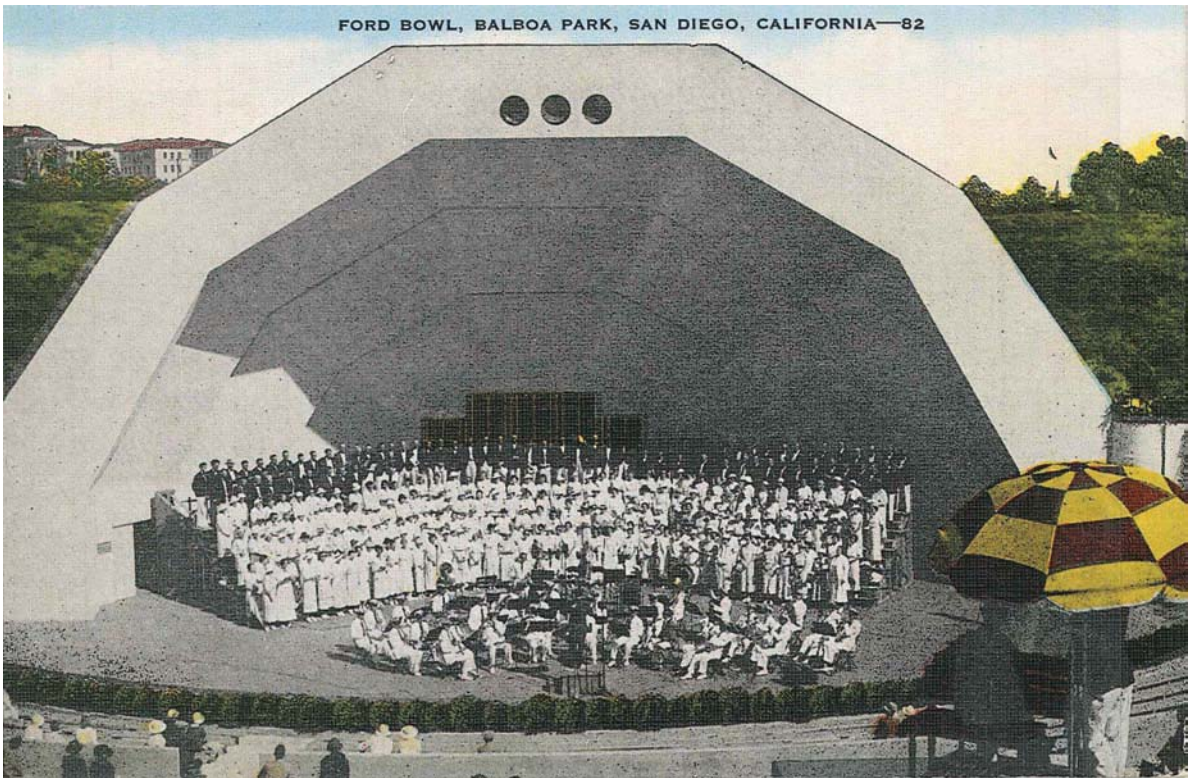


Photo H4: The Ford Bowl ca. 1935.

Photo H5: The Ford Bowl ca. 1935, looking southwest.

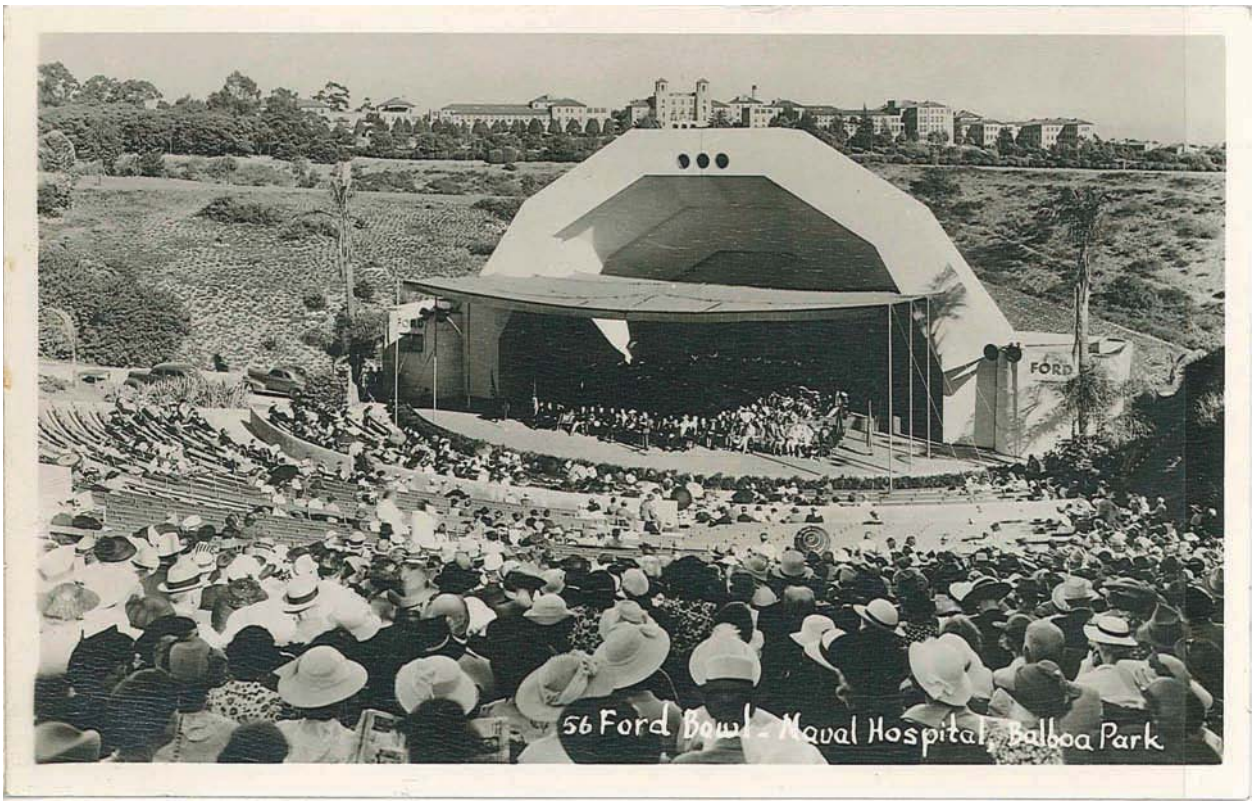


Photo H6: The Ford Bowl ca. 1935. Note the temporary shade structure.

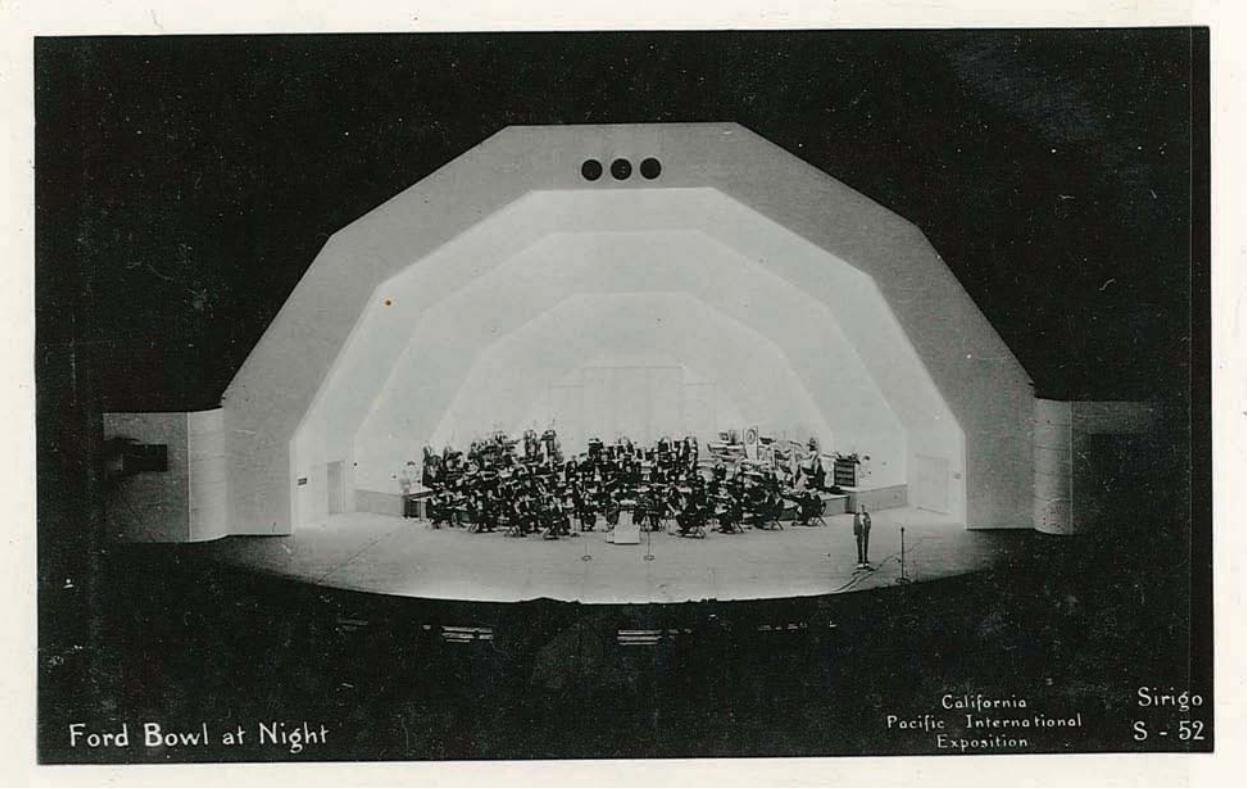


Photo H7: The Ford Bowl ca. 1935.

Photo H8: The Ford Bowl ca. 1935.

Photo H9: The Ford Bowl ca. 1935.

Photo H10: The Ford Bowl ca. 1935.

Photo H11: The Ford Bowl ca. 1935.

Photo H12: The Ford Bowl ca. 1935. Notel the bench seating.

SECTION III – EXISTING CONDITION ANALYSIS & RECOMMENDATIONS

The following section provides an assessment of existing conditions for the different building systems and materials that comprise the Starlight Bowl. This assessment of the existing conditions was developed through on-site investigation of the structure.

Terminology
The elements and features of the Starlight Bowl may contain several levels of quality from good to poor condition depending upon the exposure to environmental or external elements and how repairs have been executed over the years.

The analysis of historic fabric is based on subjective criteria in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (*The Standards*). There are three basic levels used to describe the existing condition of the historic fabric: Good, Fair, and Poor.

1. **Good Condition**
   Good condition implies the fabric is stable and is not immediately threatened by environmental or external elements. An example would be paint that is faded due to ultraviolet exposure with a stable wood substrate. The existing paint can be lightly sanded and new paint applied.

2. **Fair Condition**
   Fair condition implies the fabric has lost some of its integrity, but can be stabilized or restored with a moderate effort. An example would be flaking paint with cracks in the wood, requiring removal of portions of the paint, repair of the wood, and repainting.

3. **Poor Condition**
   Poor condition implies that the fabric may be deteriorated beyond repair and may need to be reconstructed to return the object back to its original state or will require a major effort for restoration. An example would be almost total loss of paint and severe checking or dryrot of the wood, requiring replacement of more than one-third of the original wood with new wood.

   In general, the addition of adjectives such as very, extremely, exceptionally, etc. is not recommended. The simple nomenclature of good, fair, and poor allows reasonable ranges of definition.

SUMMARY OF EXISTING CONDITION

Site:
The Starlight Bowl is located at the south end of the Pan American Plaza (refer to Photo 1). The Pan American Plaza was originally a large landscaped public plaza. It is currently paved and used as a surface parking lot. The main entrance to the bowl faces the courtyard in front of the Air and Space Museum. There is a non-historic two-story box office structure on the northwest side of the bowl. Behind the box office building there is an open walkway and a tall plaster-clad wall enclosing the audience area of the bowl. Access to the bowl is provided by four wood double gates in the wall that

align with the main aisles in the bowl. The Municipal Gymnasium building is located directly north of the bowl and there is a surface parking lot to the south. The north side of the site has a steep access road to a small flat area behind the bowl (refer to Photo 15). The area behind the bowl to the east is steeply sloped with natural vegetation (refer to Photo 17).

There is a deck on the south side of the bowl (refer to Photo 16). The deck was previously used as a lounge area for performers and as an outdoor set shop. The deck is in poor condition and is unstable. It is a hazard and should be removed immediately. When the building is rehabilitated, a new deck should be constructed. The new deck should include an overhead shade structure and furniture for seating. The shop area should be located elsewhere, ideally contained in the same building as the new offices which should be located on the southeast side of the property, behind the bowl in a new structure.

The truck and delivery road, which provides access to the loading dock on the north side of the bowl, has a steep slope (in excess of 22% in some locations). Additionally, the loading area is undersized. Ideally there should be space for two semi-trucks to park at the loading area. There is currently space for one parked truck. The access road and parking area will require grading and re-paving. In addition to the loading area, the road will need to provide access to the lower area behind the bowl. The bowl rehabilitation will ideally include the addition of a detached structure for staff offices and a set shop. This building will require vehicle access and parking (including one van accessible parking space).

Roofing (all buildings):
The existing roofing at all four buildings of the Starlight Bowl is built-up and there are asphalt shingles over the curved shell. The date of the roofing is unknown. Based on the existing conditions it appears likely that the existing roofing was installed in 1995, coinciding with the construction of the fly-loft. That would make the existing roofing approximately 18 years old. It is therefore likely that the roofing is close to its usable life expectancy and should be replaced as part of this rehabilitation project.

Box Office and Concessions Building:
The Box Office and Concessions building is not historic. This detached structure was added to the property sometime between 1961 and 1981 (refer to Photos 31 and 32). The building contains a ticket office and conference room on the south side (refer to Photos 33 and 34) and concessions on the north side (refer to Photos 35 and 36). There are two small offices on the second floor. There are three steel roll-up doors on the east wall of the second floor offices that overlook the bowl. The second floor was previously used for AV controls and lighting. Generally, the interior and exterior condition of this structure is good although some stucco deterioration was observed at the base of the exterior walls and there are some issues regarding the functionality of the layout. The operator has indicated that they do not need offices in the building. They would prefer to have offices in a new detached building which would be located behind the bowl on the east side of the site. Additionally, they would like to provide a better entry experience with a main entrance and ticket windows facing the main parking area instead of the Air and Space Museum. They would also like to have better signage, possibly including a marquee and electronic billboard to attract more visitors. Ideally, the ticketing and concessions windows would be flipped so that the ticketing area is on the north side and the concessions area on the south. Concessions should also be turned inward so it faces the audience area. This would improve access for audience members.

The existing free-standing wall between the box office building and the bowl is also not historic. It was added in 1961 and remains in fair overall condition. The wall is located directly behind the top row of seats, eliminating a rear aisle inside the bowl (refer to Photo 4). Since the wall is not historic it could be removed. If the box office is redesigned and rebuilt, access control to the bowl could be provided at the perimeter of the new building, eliminating the need for an additional site wall. Even if the existing box office building is retained, gates could be added to the existing building allowing removal of the wall. That would allow improved circulation in the bowl and better use of the open space between the seating area and the box office. There would need to be some way to control sounds from the concessions area so that it does not disturb performances.

Seating Area:
Deferred maintenance since performances ended in the bowl has resulted in some negative impacts to the seating area. Weeds have sprung up from many of the cracks (refer to Photos 9 and 10). Several cracks are significant; some with vertical displacement that creates a trip hazard. In addition to the cracks, many of the aisle steps have been modified. Modifications were completed in the 1995 remodel to accommodate the expanded stage and orchestra pit. Additionally, many of the concrete aisle steps have been replaced to accommodate recessed lighting. It appears that the original treads were 12-inches wide, the newer treads are 14-inches wide. This disparity creates a lack of uniformity in the tread widths in all of the aisles, a condition which can be confusing and potentially hazardous for users that is not permitted by current code (refer to Photo 11). This problem has been exacerbated in several locations by modifications to the treads to accommodate changes such as the aisle entry to the lower restrooms.

Several small sections of seats have been removed to accommodate raised platforms. There are two speaker platforms on either side of the stage (refer to Photo 5). These concrete platforms are intended to hold speaker towers. This configuration is not ideal because the sound distribution is not even in the audience area. Seats next to the speakers get too much volume and seats far way don't get enough. A better configuration is to provide suspended speakers in several locations. This could be integrated with the new partial cover that is proposed for airplane noise reduction. This would also allow the removal of the speaker platforms improving circulation, seating, and sight lines in the audience area. Other wood-framed platforms have also been added to provide additional concession locations that are in the main audience area (refer to Photo 6). These platforms are generally in poor condition and should be removed. If an additional concessions location is desired at the bottom of the bowl, perhaps one could be provided on the south side of the stage, this would also allow access to power and water.

It is believed that the existing brown folding seats were installed in the 90s after they were salvaged from Qualcomm Stadium. If this is the case, they were the original seats from that stadium and they would be nearly 46 years old. The seats appear to be in fair overall condition, but due to their age, fading, and consistent outdoor exposure replacement should be considered.

Shell:
The original 1935 band shell is wood framed with plaster cladding on wire lathe (refer to Photos H1-H12). The shell is still visible from the stage, but it is obscured from the audience area by the fly-loft which was added in 1995 (refer to Photo 2). The shell remains in good overall condition.

Fly Loft:
The fly loft was added in 1995. It is steel framed with corrugated metal cladding and a flat roof (refer to Photo 2). The structure is in good condition, but it unfortunately obscures the historic shell and it significantly detracts from the historical character of the bowl. The plant-on plaster arch on the front of the structure, which was apparently intended to mimic the original shell, does little to mitigate the visual impact of the structure (refer to Photo 2 and 3). This superfluous and ineffective detail should be removed. Since it is not feasible to remove the fly loft for functional reasons, a more suitable and attractive façade cladding should be designed.

Stage:
The stage flooring consists of composite wood panels. The panels are in poor condition due to exposure and new flooring should be installed.

The existing orchestra pit was added during the 1995 remodel (refer to Photos 3 and 7). It consists of a concrete pit which is accessed by concrete steps on the north side of the stage. There is a niche on the south side of the pit that was intended for a wheelchair lift. The lift has been removed. The existing pit is too deep for a pit band playing level. The depth appears to have been dictated by the adjacent basement floor level and there is a removable plywood panel that provides direct access to the partial-height storage room below the stage. The storage room is not accessible to wheelchairs and it is not a practical means of accessing the orchestra pit. If direct access to the basement is desired, additional work would be required in the storage room to deal with the head clearance, floor level changes, and doors. Additionally and orchestra pit lift would be required so that the floor level could be adjusted to an appropriate playing level. Adding an orchestra pit lift would enhance the functionality of the pit and provide greater flexibility for performances. A wheelchair lift would be required in either event to provide access for wheelchairs. Wood framing has been added on all sides of the pit to extend the stage and add a "passerelle" (refer to Photo 8). The wood framing and plywood flooring are in poor condition and should be removed.

Backstage:
There is a curved interior area along the backside of the original stage shell that is currently used for storage. There is a dressing room on each side of the stage. Each dressing room originally had two toilet rooms. The toilet rooms at both dressing rooms have been altered to provide a wheelchair accessible toilet room on each side of the stage (refer to Photo 21). In general, the interior fixtures and finishes in the dressing rooms and toilet rooms are in poor condition and they need to be replaced.

The rest of the backstage area on the main floor is generally used for storage. There several diagonal wood braces that support the original band shell (refer to Photo 18). The braces create a head-height obstruction requiring people to duck around them. There is a significant inventory of used costumes, old stage decorations, and debris which are stored backstage (refer to Photo 19). These items should be removed and donated or otherwise disposed of. There is a possibility that some of the costumes could be cleaned and reused for productions at the Starlight Bowl. All of the backstage areas and storage rooms should be cleaned. The lack of organization in the storage areas and the accumulation of miscellaneous debris create a potential fire hazard.

Additional dressing rooms and storage spaces are located downstairs in the basement (refer to Photos 22-28). Like the main floor, the interior finishes and fixtures in the lower floor are in poor condition (refer to Photos 29 and 30). Future rehabilitation should include removal of all debris and stored items, cleaning, and replacement of all interior fixtures and finishes.

There are several remaining historic windows in the backstage area. There were originally twelve historic wood three-lite hopper windows on the east wall of the lower level. Six of these windows remain. The other windows have been removed or altered to accommodate a new door a shower rooms. Two similar windows were originally located in the north wall. The windows have been removed and the openings are filled with a steel security screen. At least two of the original wood window sashes remain stored in the dressing rooms (refer to Photo 26). Original windows on the main floor included six wood 2-lite hopper windows on the east wall (refer to Photo 20) and four single-lite wood casement windows at the original dressing room bathrooms on the main floor. All six of the hopper windows remain although two of the windows are missing glass. Two of the four original bathroom casement windows have been removed. A steel sash casement window has been added in the non-historic office space which was added on the main floor next to the basement stairs.

In general, the remaining historic windows are in fair condition. The windows require repair and stabilization including some wood repair, joint stabilization, replacement of missing hardware, replacement of missing and broken glass, replacement of glazing compound, and repainting. The original windows should be preserved and protected. Missing windows should be replicated if feasible.

Public Restrooms:
The public restrooms at the Starlight Bowl are not historic (refer to Photo 37). Both restroom buildings were added to the property sometime after 1965. The two detached structures are located on the north and south sides of the audience seating area. The restroom structure that is located on the south side of the bowl can be accessed by wheelchairs. The restroom on the north side of the bowl is accessed by stairs only and is therefore not accessible to wheelchairs. Both buildings have plaster-clad exterior walls with flat parapeted roofs. Although the buildings are not historic, they do not detract from the historical character of the property because their design is sympathetic to the historic period. The exterior plaster is generally in good condition, although some deterioration and plaster spalling was observed on the bottom 12-inches at the exterior walls of the south building. The exterior doors at both buildings are solid-core wood doors with metal frames. Rust was observed at the bottom of the frames in several locations. The slab doors are in fair condition.

Both restroom structures provide separate men's and women's toilet rooms. The women's restrooms in both buildings have eight toilets with seven standards stalls and one larger stall for wheelchair access (refer to Photo 39). The women's restrooms each have three lavatories. Both men's restrooms have two toilets with one standard stall and one wheelchair accessible stall in each structure. The men's restrooms each also have eight wall-hung urinals and two lavatories (refer to Photo 38). The total number of fixtures provided in the existing restrooms falls short of the current code requirements (refer to the plumbing summary included in Section VII). One or both of the existing restroom structures will need to be enlarged to provide additional toilets. We would recommend that these changes be made in the accessible restroom building on the south side of the bowl, leaving the other building unchanged (with the exception of replacing fixtures and finishes). It should be noted

that the required fixture counts are based on the current seating capacity of 3,621. If the number of seats is reduced, there could be a reduction in the required number of fixtures, potentially allowing us to retain both buildings with their existing fixture counts.

Each restroom structure is equipped with one exterior drinking fountain. Based on the occupant load of the bowl, current code requires a minimum of nine drinking fountains. Seven additional drinking fountains will therefore be required.

The typical floor finish is resilient sheet flooring with an integral coved base. Walls and ceilings are finished with painted CMU or cement plaster. Toilet partitions are powder-coated metal. In general, the interior restroom finishes and fixtures are in fair condition, but they are dated and somewhat worn due to heavy use as well as a lack of recent maintenance caused by the prolonged vacancy of the bowl. Additionally, the current stall layout does not provide the required semi-ambulatory stalls and the existing wheelchair stalls do not meet the minimum size or clearance requirements listed in the current code. Replacement of all of the existing interior finishes, fixtures, partitions, and accessories is therefore recommended in all of the restrooms.

CODE ISSUES

Construction Type:
The historic shell structure of the Starlight Bowl is constructed of wood framing with cement plaster cladding and wire lathe. The recent (ca. 1995) fly-loft is steel framed with metal cladding. The fire resistive rating, if any, of the main building is unknown. Therefore, the construction type is Type V-B.

Occupancy:
The occupancy classification of the Starlight Bowl is A-5. A-5 occupancies are assembly uses intended for participation in or viewing of outdoor activities. Depending on the design of the partial cover that is proposed to mitigate airplane noise, there is a possibility that this classification would change, requiring numerous code upgrades, for fire safety, egress, and seismic standards. This will need to be further evaluated and discussed with building officials early in the design phase. In the event that the seating areas is fully enclosed, this would definitely change the occupancy classification of the building requirement a full upgrade of all building systems.

Allowable Building Height and Area:
A-5 occupancies are permitted unlimited height and area for all construction types including Type V-B.

Fire Safety:
Stages are required to be equipped with an automatic fire-extinguishing system. Sprinklers are also required in dressing rooms, performer lounges, shops, and storerooms accessory to the stage. An automatic sprinkler system is also required in the following areas for Group A-5 occupancies: concession stands, retail areas, press boxes, and other accessory use areas in excess of 1,000 square feet.

The stage, bowl, and backstage areas of the Starlight Bowl are currently equipped with fire sprinklers. The fire sprinkler system was added in 1980. The concession area and box office are not equipped with fire sprinklers. Fire sprinklers are required by code for these spaces.

Number of Exits:
Current code requires a minimum of four exists for any space with an occupant load greater than 1,000. The occupant load for the Starlight Bowl is based on the number of fixed seats and occupant load factor for areas in the bowl that do not have fixed seating such as box seating areas, the stage, and backstage areas. Based on the existing seating chart, the total number of fixed seats in the existing audience area is 3,621. Assuming full capacity, performers, and staff, we can estimate the total occupant load for Starlight Bowl is approximately 4,000 people. Therefore, at least four exits are required by code. The existing egress system at Starlight Bowl includes five exits, satisfying this provision of the code.

Location of Exits:
For spaces that require three or more exits, such as the Starlight Bowl, code requires that at least two of the exits are separated by not less than one-half of the maximum diagonal dimension of the area served. This provision of the code is satisfied by the current exit locations at the Starlight Bowl. There are currently four evenly spaced exits at the upper end of the bowl and one lower exit on the north side of the bowl. The exits are adequately spaced to comply with current code.

Exit Width:
The minimum exit width required by code for outdoor smoke-protected assemblies, such as the Starlight Bowl, can be calculated by multiplying the occupant load by .08-inches. Given an approximate occupant load of 4,000, the total required exit width would be 320-inches (26'-8"). The existing total exit width at Starlight Bowl exceeds this minimum requirement.

Aisle Width:
The minimum aisle width required by current code is 48-inches for aisles that have seating on both sides and 36-inches for aisle that have seating on one side only. The existing aisles at Starlight Bowl exceed these minimum dimensions.

Trip Hazards:
As previously discussed, the aisles currently have several cracks, some with vertical displacement that creates a trip hazard. In addition to the cracks, many of the aisle steps have been modified. Many of the concrete aisle steps have been replaced to accommodate recessed lighting. It appears that the original treads were 12-inches wide, the newer treads are 14-inches wide. This disparity creates a lack of uniformity in the tread widths in all of the aisles, a condition which can be confusing and potentially hazardous for users that is not permitted by current code. This problem has been exacerbated in several locations by modifications to the treads to accommodate changes such as the aisle entry to the lower restrooms. Steps that create uneven tread widths should be removed and replaced to provide uniform steps in each section.

ACCESSIBILITY REQUIREMENTS

Seating Accessibility:
Originally, the bowl did not accommodate wheelchair access. Subsequent modifications to the seating area completed in 1981 included the addition of two raised platforms at the back of the bowl for wheelchair seating (refer to Photos 12 and 13). According to the 1995 drawings, wheelchair access to the bottom seating area was to have been added on the north side of the bowl. The drawings indicate a new accessible parking space adjacent to the existing truck and delivery entrance. Wheelchair users would then cross the loading area and enter on the north side of the stage (refer to Photo 14). There are several problems with this scheme. First, the accessible parking space is not near the main building entrance. Second, the slope and cross-slope of the truck access road are excessive (more than 22% slope in some areas). Finally, it is not desirable for audience members to share access with delivery vehicles (refer to Photo 15).

It is feasible to provide accessibility to the lower level of the seating area on the south side of the bowl. A wheelchair accessible path of travel to the lower seating area could be provided in one of two ways. The first option would be to provide a raised walkway spanning the hillside from the parking area on the south side of the bowl to a new elevator tower which would most likely be located adjacent to the south end of the existing fly-loft or next to the restroom building. This would provide access to the lower seating level from the main level. The second option would be to provide a long ramp on the south side of the bowl. Due to the 42'-6" level change from the upper aisle to the bottom of the bowl, the ramp would need to be more than 500-feet long with landings no more than 30-feet on center. A ramp could potentially provide access to one or more of the intermediate seating levels in addition to the top and bottom of the bowl. Additionally, stairs could be incorporated into the ramp design to provide additional exit points from the lower seating areas to the adjacent parking lot on the south side of the bowl. Despite these advantages, a ramp of this length could prove impractical for users.

Current code requires six wheelchair seating spaces plus one additional space for each 100 seats in excess of 500 seats. At the Starlight Bowl, the existing seating count is 3,621. That means there must be at least 38 wheelchairs seats in the audience area. According to the current seating chart, there are 51 wheelchairs seating spaces. This does not appear to reflect the actual number of wheelchair spaces. In addition to that, the wheelchair spaces on the lower level are not actually accessible because there is no accessible path of travel from the parking lot to the lower entrance. Therefore, the current number of wheelchair seating spaces and the actual distribution of the spaces are not adequate. Wheelchair seating spaces must be at least 33-inces wide and 48-inches deep for front and rear access and 60-inches deep for side access. If the rear wall at the top of the bowl where removed, allowing for a back aisle, it would be much easier to provide wheelchair seating at the top of the bowl. Wheelchair seating and access to the bottom of the bowl need to be redesigned.

Per code, wheelchair accessible seating should be an integral part of the seating plan so as to provide persons with disabilities the full range of admission prices and lines of sight comparable to those that are available to able-bodied persons. For facilities, such as the Starlight Bowl, which have more than 300 seats, wheelchair spaces must be provided in multiple locations. Each accessible seating area should have provisions for companion seating and should be located on an accessible route that also serves as a means of emergency egress.

In addition to spaces provided for wheelchair users, the code requires at least one percent of all seating to accommodate semi-ambulant individuals. Such seats should provide at least 24-inch clear leg space between the front of the seat to the nearest obstruction or to the back of the seat immediately in front. At the Starlight Bowl, the required 37 semi-ambulant seats could be provided at the front row of each section where there is an existing 2'-6" wide aisle. Code also requires 1 percent of all fixed seats to be aisle seats with no armrests on the aisle side, or removable or folding armrests on the aisle side. Each such seat must be identified by a sign or marker with the International Symbol of Accessibility and signage notifying patrons of the availability of such seats shall be posted at the ticket office. The existing aisle seats do not have removable or folding armrests.

Restroom Accessibility:
Of the two public restroom buildings, only one is currently accessible to wheelchairs. The other building (on the north side of the bowl) is located further down in the audience area and is therefore not accessible to wheelchairs. The accessible building contains separate men's and women's facilities. The women's restroom provides a total of eight stalls with one wheelchair accessible stall. The men's restroom has two stalls and eight urinals. One of the stalls is wheelchair accessible and the other is standard size. None of the urinals are mounted at wheelchair height or have handrails. Replacement of dated interior finishes, accessories, and partitions is recommended for all of the restrooms. The rehabilitated restrooms should include at least one wheelchair accessible stall and one additional semi-ambulatory stall in each toilet room. All restrooms are required to have at least one accessible lavatory and the men's restroom is required to have at least one accessible urinal.

Office Accessibility:
New office facilities for the Starlight Bowl may eventually be located in a new free-standing office and storage building on the east side of the site (below the bowl). The office building must be designed to provide access for the disabled. Additionally, separate staff parking, including at least one van-accessible parking space, should be provided near the office structure. The existing office space on the second floor of the box office and concessions building is not wheelchair accessible because there is no elevator or lift. Ground floor spaces in the building could be made accessible.

Performance Area Accessibility:
Code requires an accessible route connecting wheelchair seating locations with performing areas including stages, dressing rooms, orchestra pits, locker rooms, and other spaces used by performers. At the Starlight Bowl, the stage is approximately level with the lowest seating area so wheelchair access could be provided with a short ramp from the seating area. There are two dressing rooms at the stage level that could be made wheelchair accessible. The dressing rooms and storage spaces on the basement level could not be made accessible without the addition of an elevator. If equivalent facilitation can be provided with accessible dressing rooms and storage spaces on the ground floor, the addition of an elevator to the backstage basement area would not be required.

Ticket Booth and Concessions Accessibility:
Customer and employee sides of ticket booths and concession/refreshment sales facilities are required to be accessible to persons with disabilities. Accessible height services counters are also required.

ACOUSTICAL ISSUES

If the Starlight Bowl is to be reopened as a performance venue, the poor acoustical conditions within the bowl will need to be addressed. The primary acoustical problem is the close proximity of the open-air seating to the flight path of San Diego International Airport (Lindbergh Field). Graphics have been provided in the acoustical assessment in Section IX of this report showing the typical flight path adjacent to the Starlight Bowl. According to the acoustical data collected by McCay Conant Hoover (also included in Section IX) normal ambient noise levels, caused by the adjacent freeway and other noises within and around the park, is relatively steady at around 48dBA during the daytime. Noise levels in the evening, when performances are more likely to be scheduled, are slightly lower. These noise levels would be acceptable for an urban outdoor performance venue. There are other venues, including the John Anson Ford Amphitheater in Los Angeles, that function successfully under similar ambient noise conditions. However, sound levels in the Starlight Bowl do not plateau at 48dB, they rise to about 80dB when an airplane is overhead. This noise level is roughly equivalent to a diesel truck at 50-feet away traveling 50mph. Although the duration of these maximum noise levels is relatively short (approximately 20 seconds), the audible and visible distraction is unacceptable for live performances.

Possible Noise Mitigation Options

After collecting noise data at the bowl, Heritage and the consultant team discussed several possible ways to mitigate the noise issue. Options included various types of partial acoustical canopies, a complete enclosure of the seating area, and various types audio systems and enhancements.

The most effective approach from an acoustical perspective would be to completely enclose the seating area. According to the acoustical assessment, a full cover could reduce airplane noise to "little more than a detectable blip." Despite the acoustical benefits of this scenario, there are several challenges to this approach. First, the bowl would no longer be an open-air, outdoor venue. Second, a fully enclosed space would not only change the occupancy classification of the bowl (triggering numerous code upgrades), but enclosing the space would also require entirely new mechanical and ventilation systems. In the end, a fully enclosed seating area would likely require a complete new building. This would likely require complete removal of remaining historic fabric in the seating bowl and would eliminate the historical character of the bowl. Such an approach would not comply with The Standards and would undoubtedly be challenged during the historical review process.

The option of partially covering the seating area is discussed at length in the acoustical assessment. When designing a partial cover, the best way to address noise is to eliminate the line-of-site to the offending noise-generator, in this case the airplanes. By blocking the line-of-site the direct path for sound is also blocked. In order to block the lines-of-site to airplanes from the seating area much of the audience area, including most of the south side of the bowl, would need to be covered. In addition to direct noise, the seating area in the bowl also receives a significant amount of reflected noise which bounces off of the adjacent Municipal Gym building, the rear wall of the bowl, and the adjacent Air and Space Museum west of the bowl. Reflected noise could be blocked by increasing the area of the cover and/or adding sound absorptive materials on the reflecting surfaces. In order to provide an optimal noise reduction in the seating area by blocking direct and reflected airplane noise, the cover would need to be a substantial structure (solid panels of 10 pounds per square foot or more) covering approximately 2/3 of the seating area. A light fabric structure or open canopy would not be

sufficient to mitigate direct or reflected noise. If the cover were designed to meet these criteria, a noise reduction of 16-22dB from the peak of 80dB could be expected. This would reduce the maximum noise levels in the seating area to approximately 58-64dB. This noise level would be roughly equivalent to heavy traffic at approximately 300 feet away.

To put the acoustical benefit of this level noise reduction in perspective, the airport authority has been working for several years to mitigate aircraft noise in residential buildings near the San Diego International Airport. They offer a free program to residents in the vicinity of the flight path which upgrades or replaces windows and mechanical equipment. Their goal is a 5dB reduction in noise. A 5dB reduction in noise is seen as a significant improvement allowing the occupant to continue a conversation or TV watching without having to pause. In acoustical tests when listeners are asked to estimate noise reduction, a 10dB reduction is generally perceived as a reduction by half of the original sound level. A 16-22dB reduction at the Starlight Bowl would therefore be a significant improvement.

It should be noted that a partial cover which provides this level of acoustical improvement would be substantial in size, covering 2/3 of the seating area. Covering this much of the bowl may cause a change in occupancy classification which would trigger a major upgrade to building systems in order to comply with current code requirements. Additionally, if 2/3 of the seating area is covered the feeling of the open-air setting would be altered significantly. These issues will need to be weighed carefully against the acoustical benefits of such a cover.

The option of a smaller canopy is also discussed. Such a canopy would cover only the front half of the seating area, leaving the rear seating sections open-air. This arrangement, would work well with preliminary seating concepts which includes removal of the rear section of seats to provide informal terraced "lawn" seating. However, the acoustical benefits would not be as good as a larger cover. Most of the acoustical benefit would be limited to the area directly under the cover (at the front of the seating area). There would be a noise reduction of approximately 20dB at the best seats under the canopy. The overall level of noise reduction, although significant, may not produce the acoustical environment desired by the users and performers at Starlight Bowl. There would be little to no acoustical benefit for the uncovered seats at the upper half of the bowl. It should be noted that a smaller cover would be less likely to trigger changes to the occupancy classification and associated code upgrades. Additionally, a smaller cover would be less expensive to construct and easier to get approval of through the required historical review process.

Outdoor Performance Venue Comparison

A full acoustical analysis of other outdoor venues in San Diego is not part of this feasibility assessment for the Starlight Bowl. However, a general understanding of the differences in these venues with regard to performance types and likely noise levels due to the proximity to potential noise generators (such as freeways and airports) is a valuable tool in understanding the special conditions at the Starlight Bowl. The following table has been developed to summarize the proximity of the Starlight Bowl and other local open-air venues to potential noise sources.

OUTDOOR PERFORMANCE VENUE COMPARISON TABLE

Outdoor Venue	Approximate distance from Lindbergh flight path	Approximate distance from nearest freeway(s)	Approximate distance from other noise sources	Approximate seating capacity	Year venue opened	Type of performances
Humphreys	2 miles	3 miles	12 feet from San Diego Bay and .75 mile from North Island NAS	1,400 seats	1982	Music Concerts and Comedy Shows
Summer Pops (Embarcadero)	2.5 miles	1.25 miles	100 feet from San Diego Bay, .30 mile from trolley, and .40 mile from Seaport Village and downtown San Diego	2,600-4,700 seats	2004	Music Concerts
Old Globe's Lowell Davies Theater	.5 mile	.25 mile	.15 mile from the San Diego Zoo	605 seats	1984	Plays and Musicals
SDSU Open-Air Amphitheater	7.5 miles	.35 mile	N/A	4,600 seats	1941	Music Concerts
Cricket Amphitheater	14 miles	1.5 miles	1.75 miles from Brown Field Airport	19,492 seats	1998	Music Concerts
Starlight Bowl	.1 mile	.15 mile	.50 mile from the San Diego Zoo	4,300 seats	1935	Musical Theater and Productions

The table shows that the Starlight Bowl is significantly closer to the airport flight path than the other venues. While some other venues are close to other noise sources, these sources don't produce the amount of intense noise generated by a commercial airliner. If one were to measure the noise levels in these other venues, it is expected that the peak levels would be lower than they are at the Starlight Bowl.

**Refer to Sections VI-XI of this report for detailed summaries of the existing structural, mechanical, plumbing, electrical, theater, and acoustical conditions.

Existing Condition Photographs:

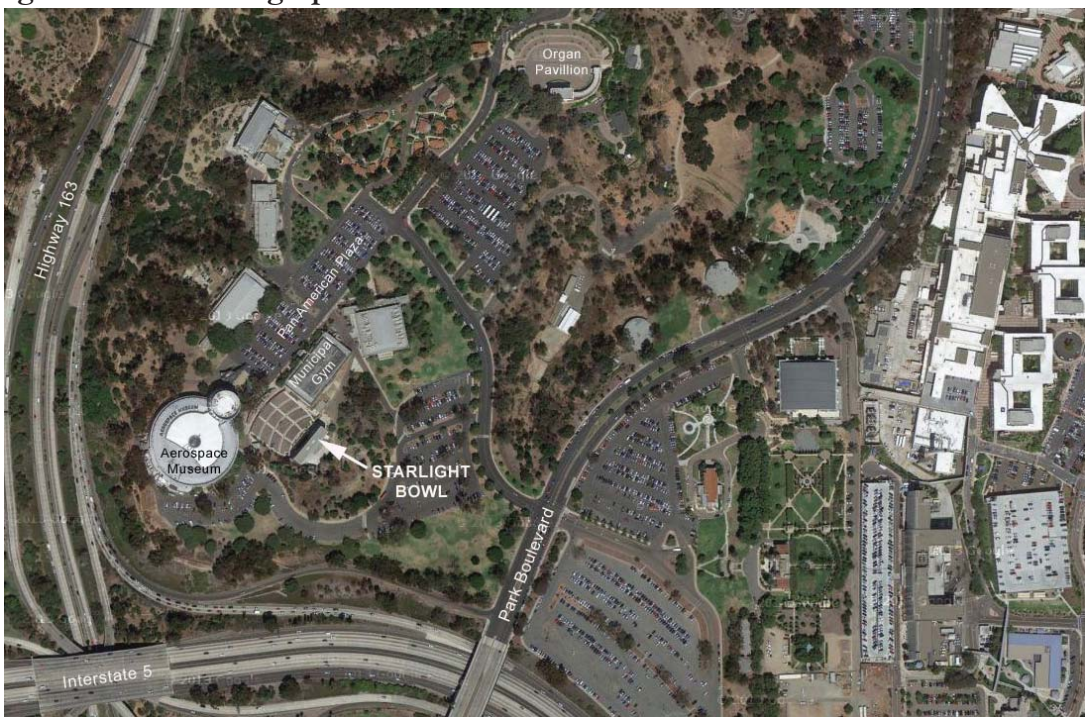


Photo 1: Current aerial photo of the Palisades area of Balboa Park. The Starlight Bowl is located at the southeast corner of Pan American Plaza.

Photo 2: The Starlight Bowl looking east toward the stage. The non-historic green fly loft addition covers the original shell.

Photo 3: The bowl looking south toward the stage.

Photo 4: The upper seating level of the bowl looking south. The wall and canopy on the right was added in 1961.

Photo 5: One of two speaker platforms in the front of the audience area.

Photo 6: A non-historic platform added for concessions. The wood framing is in poor condition and it should be removed.

Photo 7: The lower seating area looking north over the non-historic orchestra pit in front of the stage.

Photo 8: The orchestra pit. Wood framing and a walking surface have been added around the edges.

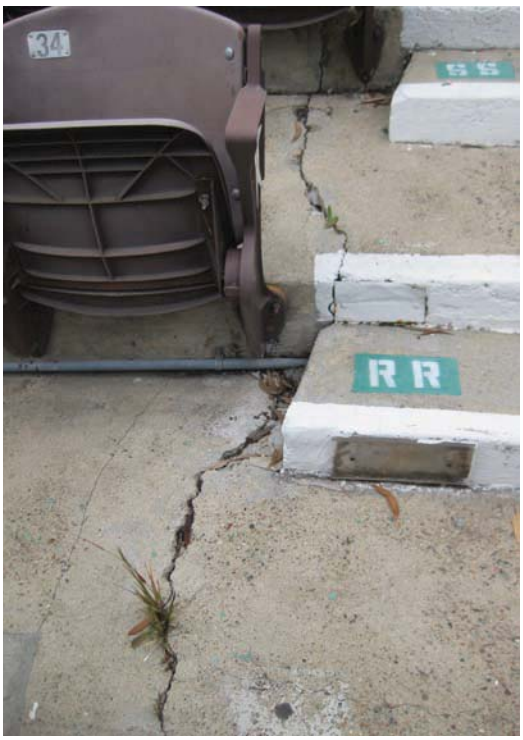


Photo 9 & 10: Photos showing the typical condition of concrete paving and recessed lighting in the aisles. There are many significant cracks and the lighting is in poor condition.

Photo 11: Uneven steps on the north side of the bowl. The trapezoidal landing has been added to provide access to the restroom building.

Photo 12: Wheelchair accessible seats at the top of the bowl. The dimensions of the accessible seating areas do not comply with current standards.

Photo 13: An entrance and landing at one of the accessible seating areas. The landing is too small.

Photo 14: An entrance/exit on the north side of the stage. This entrance does not comply with accessibility standards because there is no accessible path of travel outside.

Photo 15: The loading area on the north side of the stage. The truck parking area is too small and this entrance should not be used for wheelchair access because the road is too steep, there is no accessible parking, and sharing access with delivery vehicles is potentially dangerous.

Photo 16: The outdoor deck and fabric canopy behind the bowl. The deck is in poor condition and it is hazardous. It should be removed immediately and a new deck added.

Photo 17: The east side of the site behind the bowl.

Photo 18: The interior of the historic shell. Note the diagonal structural braces.

Photo 19: The interior of the shell. The stored items and debris should be removed.

Photo 20: Historic wood hopper windows on the east side of the backstage area.

Photo 21: An accessible restroom at one of the two dressing rooms on the ground floor.

Photo 22: One of two original dressing rooms in the basement.

Photo 23: The east wall of one of the historic basement dressing rooms. One of the historic windows has been removed to add a door. Another window is partially covered by a mirror.

Photo 24: The other original dressing room in the basement. The counters, mirrors, carpet, and furnishings are non-historic. The windows are historic.

Photo 25: An original double door to one of the original dressing rooms in the basement. Original doors are single-panel wood doors with ball-tipped hinges and mortise locksets.

Photo 26: A salvaged original window stored in the basement.

Photo 27 & 28: Historic plumbing fixtures in one of two original restrooms in the basement. The lavatories, toilets, and toilet partitions are original.

Photo 29: A storage area in the basement.

Photo 30: The ceiling in the storage area. The plaster is water damaged and some has fallen. A hazardous materials survey is recommended to determine if there is asbestos or other hazards.

Photo 31: The box office, looking south from the parking area. The existing facade does not attract visitors.

Photo 32: The back of the box office building looking north. The walkway between the wall and the building is uninviting and under utilized.

Photo 33: The interior of the box office.

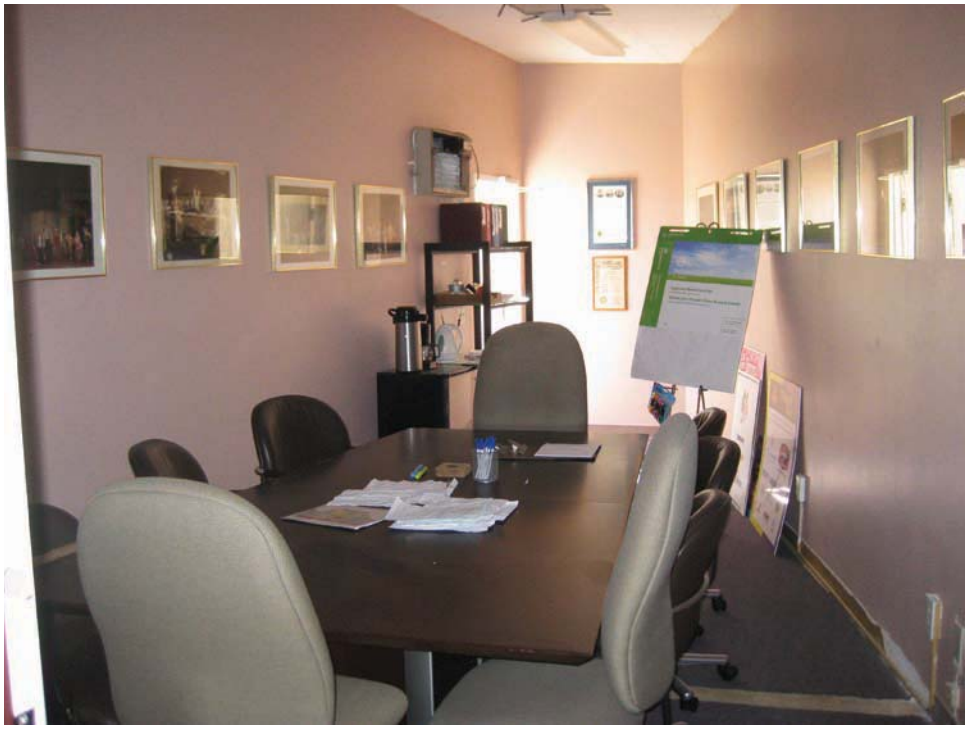


Photo 34: A conference room on the ground floor of the box office building.


Photo 35 & 36: The concession area on the north side of the box office building.

Photo 37: One of two public restroom buildings. The construction, materials, finishes, and interior configuration are similar in both buildings.

Photo 38: The interior of one of the men's public restrooms.

Photo 39: The interior of one of the women's public restrooms.

SECTION IV – IDENTIFICATION OF HISTORICAL FEATURES

Site:
Remaining historic site features at the Starlight Bowl site are limited to the landscape areas on the south and east sides of the bowl. The remaining property around the bowl has been modified to add the restroom and concessions building. The existing paving at the main entrance on the west side of the bowl is also non-historic. Originally, the entrance included a low curved wall and lawn areas. These features have been removed.

Box Office and Concessions Building:
The box office and concessions building is not historic. It was added to the site sometime between 1961 and 1981. There are therefore no historic features or finishes in the concessions building. The existing free-standing wall between the concessions building and the bowl is also not historic. It was added in 1961.

Seating Area:
Remaining historic fabric in the audience seating area includes most of the existing concrete paving and seating platforms. Over the years, many of the intermediate steps in the aisles have been replaced. The lighting that is recessed in the replaced treads is non-historic. There appears to be remnants of original recessed lighting in some of the original risers, but the original lights have been abandoned. The seats are not historic. The original seats were wood bench seats and wood backrests were installed shortly after the original construction in 1935.

Shell:
The existing shell, including the wood-framed shell structure and all interior backstage areas, are historic. The original wood framing, steel connectors, and plaster cladding remain as wells as the interior backstage areas and original wood windows on the back of the shell. A list of historic interior features in the backstage area is included below. The shell originally had recessed lighting set in the coves of the stage wall. The lighting appears to have been removed and the plaster surround has been painted black.

Fly Loft:
The fly loft is not historic it was added in 1995. There are therefore no historic features or finishes in the fly loft.

Stage:
The only remaining historic fabric in the stage area is the original shell (listed above).

Backstage:
Remaining historic fabric in the backstage area includes:

- Four original wall-mounted lavatories in the basement dressing rooms on the east side of the building (refer to Photo 27).
- Four original toilets in the basement dressing rooms on the east side of the building including the original wood toilet partitions (refer to Photo 28).
- One original toilet in the main floor dressing room bathroom on the south side of the building.

- Three historic wood doors in the basement dressing rooms on the east side of the building. Two are single doors leading to the bathrooms and one is a double door leading to one of the dressing rooms (refer to Photo 25). The historic doors are wood with one flat panel. Historic hardware includes ball-tipped hinges and mortise locksets.
- Exposed board-formed concrete and heavy timber structural supports in the basement.

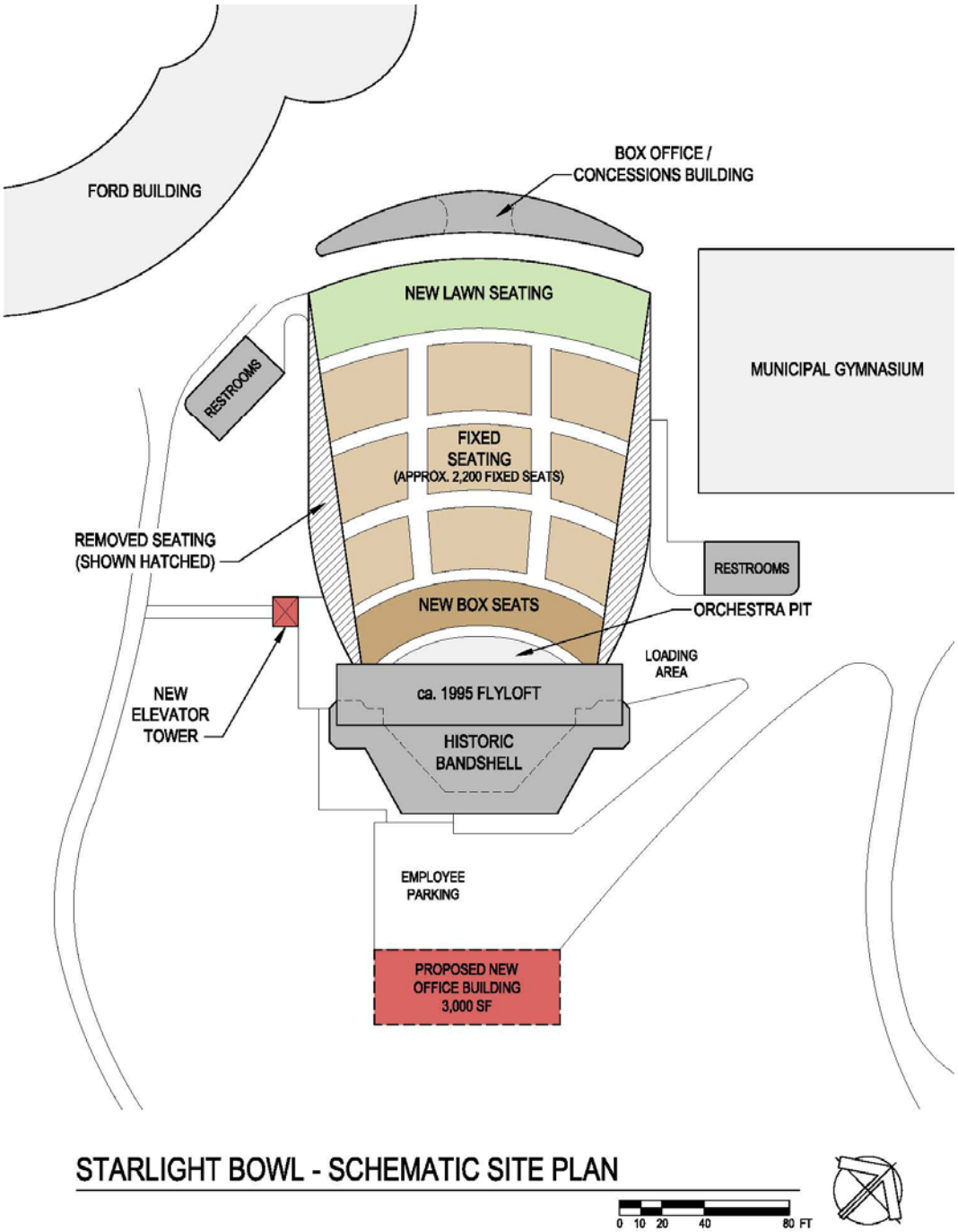
Windows:
Original windows are located on the historic shell structure only. All other windows are non-historic. Remaining historic windows include:

- Six remaining historic 3-lite hopper windows on the east wall of the basement (refer to Photos 23, 24, and 27). There were originally 12 windows. Four of the original window openings have been walled over to create privacy for two new shower stalls and another window has been replaced with an exit door.
- Two original window openings on the north wall of the basement. The window sashes have been removed (sashes were salvaged and are currently stored in one of the dressing rooms). Refer to Photo 26.
- Six 2-lite hopper windows on the east wall of the backstage area on the main floor (refer to Photo 20).
- Two original single-lite casement windows on the east wall of the restroom in the main floor dressing room on the north side of the stage.

Public Restroom:
The public restroom buildings are not historic. They were added to the site sometime between 1961 and 1981. There are therefore no historic features or finishes in the restrooms.

SECTION V – REHABILITATION SUMMARY

The original 1935 construction at the Starlight Bowl has been altered and several new features have been added to the site. Non-historic features of the site include the restroom structures, the box office and concessions building, and the metal-clad fly loft. These items may be removed or altered without negatively impacting the historical character of the property. Modifications to these elements, if carefully designed, may actually enhance the historical character of the property.



The Starlight Bowl is listed as a contributor to the Balboa Park National Historic Landmark District. Work completed on the building must therefore comply with *The Secretary of the Interior's Standards of the Treatment of Historic Properties* (*The Standards*).

The Secretary of the Interior's Standards

The Secretary of the Interior is responsible for establishing standards for all programs under Departmental authority and for advising Federal agencies on the preservation of historic properties listed in or eligible for listing in the National Register of Historic Places. In partial fulfillment of this responsibility, *The Standards* have been developed to guide work undertaken on historic buildings. There are separate standards for acquisition, protection, stabilization, preservation, rehabilitation, restoration, and reconstruction. *The Standards for Rehabilitation* (codified in 36 CFR 67.7) comprise that section of the overall preservation project standards and addresses the most prevalent treatment for the Starlight Bowl. "Rehabilitation" is defined as "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values."

Initially developed by the Secretary of the Interior to determine the appropriateness of proposed project work on registered properties, *The Standards for Rehabilitation* (*The Standards*) have been widely used over the years as a reference for historic rehabilitation projects. In addition, *The Standards* have guided Federal agencies in carrying out their historic preservation responsibilities for properties in federal ownership or control; the State Historic Preservation Officer (SHPO), and local officials in reviewing both Federal and non-Federal rehabilitation proposals. The intent of *The Standards* is to assist the long-term preservation of historic materials and features. *The Standards* pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and interior of the buildings.

As stated in the definition, the treatment "rehabilitation" assumes that at least some repair or alteration of the historic building will be needed in order to provide for an efficient contemporary use; however, these repairs and alterations must not damage or destroy materials, features or finishes that are important in defining the building's historic character. For example, certain treatments -- if improperly applied -- may cause or accelerate physical deterioration of the historic building. Similarly, exterior additions that duplicate the form, material, and detailing of the structure to the extent that would compromise the original historic character will fail to meet *The Standards*.

The ten rehabilitation provisions of *The Standards* are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. *A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.*
2. *The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.*
3. *Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.*

4. *Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.*
5. *Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.*
6. *Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.*
7. *Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.*
8. *Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.*
9. *New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.*
10. *New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

The Secretary of the Interior's Standards for the Treatment of Historic Properties and its rehabilitation provisions are considered to be advisory documents.

Secretary of the Interior's Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings: These Guidelines were initially developed in 1977 to help property owners, developers, and Federal managers apply *The Standards* during the project planning stage by providing general design and technical recommendations. Unlike *The Standards*, the *Guidelines* are not codified as program requirements. Together with *The Standards* they provide a model process for owners, developers, and federal agency managers to follow. *The Guidelines* are intended to assist in applying *The Standards* to project generally; consequently, they are not meant to give case-specific advice or address exceptions or rare instances.

Some exterior and interior alterations will be needed at the Starlight Bowl in order to assure continued use, but it is most important that such alterations do not radically change, obscure, or destroy character-defining spaces, materials, features, or finishes. *The Secretary of the Interior's Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings*, is considered to be an advisory document.

Summary of Architectural Recommendations:
The following is a list of recommended improvements for each area of the historic Starlight Bowl. The recommended improvements have been divided by priority into two sections: 1) Immediate improvements and 2) Long-term rehabilitation. Immediate improvements are items that should be completed prior to reopening the facility and before the 2015 Centennial Celebration in Balboa Park. Long-term rehabilitation recommendations are items that may take longer to implement and therefore

may not be feasible to complete prior to 2015. Long-term rehabilitation items are still recommended to make the facility function optimally.

The following list of recommendations is for architectural improvements. Additional recommendations are provided in the acoustical, theater, structural, mechanical, plumbing, and electrical summaries included in Sections VI-XI of this report.

Immediate Improvements (To Be Completed Prior To 2015):
Some of the items listed in this section are not necessarily required to make the facility function, but they are recommended improvements that could be feasibly completed prior to 2015.

General Recommendations:

- Perform a comprehensive hazardous materials survey to identify any lead-based paint, asbestos, or other hazardous materials.
- Re-key all new and existing doors.
- Perform termite inspection and treatment.
- Repaint exterior and interior at all buildings.
- Replace roofing at all buildings.
- Add a fire sprinkler system to the concessions/ticket office building.
- Add a fire alarm system.
- Add a security system.

Site:

- Remove existing deck on the south side of the stage. Construct new wood deck with overhead shade structure.
- Provide required access road improvements and truck loading area on north side of stage. This will require some re-grading to provide space for two parked semi-trucks as well as repaving the road.
- Re-stripe existing parking area and provide required signage on the south side of the bowl to provide wheelchair accessible parking spaces near the new accessible entrance. At least 2% of all parking spaces need to be accessible and at least one in every eight accessible parking spaces needs to be van accessible.
- Repair and stabilize the perimeter fencing to prevent vagrant and vandal access.

Box Office and Concessions Building:

- Replace exterior doors (4 doors).
- Façade improvements and new signage to enhance the entry experience.

Seating Area:

- Install elevator at the south side of the audience area to provide wheelchair access to the lower section of the audience area and stage. The elevator would require an elevated walkway/bridge from the parking area on the south side of the bowl over the hillside. A possible alternative to an elevator would be a ramp, but due to the elevation

change in the bowl, the ramp would need to be approximately 500-feet long with several switchbacks. Therefore, a new elevator is the preferred alternative.

- Provide additional wheelchair seating spaces.
- Reconfigure and expand the box seats to remove fixed seats and provide flexible seating for approximately 100 boxes capable of seating 400 people.
- Remove the fixed seats on the top section of seating in the bowl. Remove the concrete paving in the seating areas and provide a new terraced "lawn" casual seating area.
- Replace all remaining fixed seats (approximately 2,640 seats). Refer to the Theatre consultant's recommendations included in Section X regarding seating options. The new seats should preferably be riser mounted and provide some padding. The padding would be a benefit, not only in terms of comfort, but also for acoustics within the bowl. Other options such as seat quality, materials, level of padding, and cup holders should also be considered. For the purposes of the construction cost estimate we have assumed an approximate budget of $200-$255 per seat. This would allow for a good quality seat with some padding.
- Repair damaged concrete paving with epoxy injection. Severe cracks and vertically displaced sections will require some removal and replacement of concrete.
- Replace all aisle lighting.
- Replace existing intermediate steps in the aisles (approximately 240 concrete steps). Incorporate new recessed step lights in the new steps. Tread dimensions should match the historic 12-inch tread depth and riser dimensions should be consistent in each section.

Shell:

- Replace backstage exterior exit doors (3 double doors and 2 single doors).
- Replace missing wood platform and stairs at the backstage exit door on the north side of the stage (2 locations).
- Repair damaged plaster and missing wood lath at south corner of original bandshell (replacement area is approximately 2-feet wide and 8-feet tall)

Fly Loft:

- Install roll-up door in large opening on north side of fly loft.
- Cover the existing corrugated meal cladding and install new plaster cladding. The new façade design should be more appropriate to the historical Streamline Moderne character of the building.
- Install steel sliding doors at stage opening.

Stage:

- Replace stage flooring.
- Remove non-historic wood framed furring and floors in the orchestra pit.
- Install a new hydraulic orchestra pit lift.
- Install new wheelchair lift.

Backstage:

- Remove non-historic interior partition walls at the main floor of the backstage area (added to create an office).
- Remove and donate or dispose of all stored items in the backstage areas including costumes, props, stage decorations, tools, and miscellaneous debris.
- Remove and replace flooring throughout. The original flooring was likely wood, but carpet may be more functional for noise absorption.
- Remove and replace existing light fixtures and electrical trim throughout.
- Replace all fixtures and finishes in the dressing room bathrooms on the main floors. The first floor restrooms must be made wheelchair accessible.
- Preserve and protect existing historic plumbing fixtures in the two original bathrooms in the basement dressing rooms if feasible (4 historic toilets, historic toilet partitions, 4 wall-mounted lavatories).
- Replace non-historic fixtures and finishes in the non-historic dressing room on the west side of the basement.
- Remove and replace floor pans and wall finishes in all shower rooms (4 locations).
- Remove and replace existing non-historic interior doors (approximately 12 doors).
- Restore and refinish historic interior doors (2 single doors and one double door).

Windows:

- Restore 14 remaining historic wood windows (6 3-lite hopper windows, 6 2-lite hoppers, 2 single-lite casement windows).
- Salvage and reinstall 2 historic 3-lite hopper window sashes stored in the basement dressing rooms.
- Replicate 5 of the 6 missing historic wood windows (6 3-lite hopper windows). For the four locations where the windows have been removed to provide additional privacy for the interior shower rooms, consider reinstalling the windows even if the showers are retained. Privacy could be provided by using obscured glass or even walling over the windows in the interior side, but retaining their exterior appearance. For the window location that has been replaced with an exit door, a second exit is required for the basement (due to the occupant load) and therefore replacing the window does not appear to be feasible in this location.
- Remove non-historic steel sash casement window in the non-historic backstage office.

South Restroom Building:

- Reconfigure and enlarge building to provide the required number of fixtures. Per the plumbing assessment we need to provide one additional lavatory in the men's room,

two additional toilets in the men's room, and six additional toilets in the women's room. The number of urinals provided in the men's room could be reduced.

- Repair deteriorated plaster on bottom 12-inches of building at the south restroom building.
- Replace all doors and hardware.
- Provide new fixtures (six lavatories and vanity counters, 18 toilets, and eight urinals).
- Provide new toilet partitions. Provide wheelchair accessible and semi-ambulatory stalls per code.
- Iinstall new quarry tile flooring with coved base.
- Install new interior ceiling-mounted light fixtures (assume 8 light fixtures).
- Replace exterior light fixtures recessed in the walls (assume 9 light fixtures).
- Provide new toilet accessories including mirrors, paper towel dispensers, waste receptacles, toilet tissue dispensers, toilet seat cover dispensers, sanitary napkin disposals, and grab bars. Grab bars are required in the wheelchair accessible stalls (two), semi-ambulatory stalls (two), and at least one urinal.

North Restroom Building:

- Repair existing exterior steel door frames to remove rust patch voids (5 exterior doors). Replace solid-core wood doors and hardware.
- Remove and replace lavatories and vanity counters (five lavatories). Assume solid-surface counters.
- Remove and replace toilets (ten toilets)
- Remove and replace urinals (eight urinals).
- Remove and replace existing toilet partitions. The dimensions of the accessible stall in all restrooms will need to be adjusted to comply with current code and a semi-ambulatory stall will be required in each restroom.
- Remove existing resilient flooring and install new quarry tile flooring with coved base.
- Replace interior ceiling-mounted light fixtures (assume 8 light fixtures).
- Replace exterior light fixtures recessed in the walls (assume 9 light fixtures).
- Remove and replace all toilet accessories including mirrors, paper towel dispensers, waste receptacles, toilet tissue dispensers, toilet seat cover dispensers, sanitary napkin disposals, and grab bars. Grab bars are required in the wheelchair accessible stalls (two), semi-ambulatory stalls (two), and at least one of the urinals.

Structural Improvements:

- Patch and repair exterior stucco on the south restroom and concessions buildings.
- Probes restroom buildings to determine the condition of the out of plane anchorage of the masonry walls to the roof diaphragm. In the event that no anchorage is found, design and install proper anchorage for the two buildings. (for the purposes of the construction cost estimate we will assume that no such anchoring exists and it must be installed).
- Evaluate cracks in the seating bowl. Any cracks that pose a tripping hazard must be patched to remove such a hazard (for the purposes of the construction cost estimate, we will assume approximately 2,000 LF of crack repair).

- If the existing truss lighting is retained, provide lateral bracing with either guy wires or x-bracing.
- Provide positive connections for all wood beams bearing on concrete that currently have none.
- Concrete piers and other spalling foundation elements in the basement of the bandshell structure should be cleaned and patched with a mix that includes a corrosion inhibitor. Any exposed steel reinforcement should be cleaned and coated with a corrosion inhibitor before applying patch. (for the purposes of the construction cost estimate, we will assume approximately 100 SF of repair area in several locations).
- Remove and replace the wood deck at the rear of the original bandshell structure.
- Replace missing staircase at the rear of the bandshell structure.
- Improve drainage in the orchestra pit by adding additional drains or a sump.

Mechanical Improvements:

- Install a new code compliant ventilation system to serve all of the backstage areas of the facility. Install air conditioning as part of this system.
- Install powered exhaust fans for all the restroom and shower facilities to provide the code required amount of exhaust air.
- Install new rooftop units and ductwork for the ticket office and concessions building.
- Install exhaust fan for the ticket office restroom.
- Install exhaust fans for both public restroom buildings and provide the appropriate make up air opening in the door or the roof.
- Provide exhaust for air compressor if reused.
- Provide DDC control system for all new ventilation equipment.

Plumbing Improvements:

- Reconfigure and enlarge the south public restroom building to accommodate the code required amount of fixtures in accordance with the California Plumbing Code.
- Rehabilitate the north public restroom to replace all existing fixtures.
- Install hot water heater and necessary plumbing for hand washing sinks.
- Clean and verify all sanitary drain piping using a sewer camera. Build as built documents based on the findings. Use the testing to determine what piping needs to be replaced. Assume a substantial budget for plumbing until the condition of the piping is verified.
- Clean and verify all storm piping using a sewer camera. Build as built documents based on the findings. Use the testing to determine what piping needs to be replaced. Assume a substantial budget for plumbing until the condition of the piping is verified.
- Replace all domestic water piping based on condition and poor installation practices.
- Replace non-historic bathroom in basement backstage area due to condition and age of the piping and fixtures. If feasible, salvage and reuse original fixtures in two historic restrooms.
- Relocate the laundry room away from the electrical switchgear.

- Bring the plumbing in the concession area up to current code and supply hot water for the hand washing sinks.

Electrical Improvements:

- Replace existing 800A main switchboard with a new and larger switchboard(s). The theatre consultant has suggested several 400A company switches for lighting and one to two 100A or 200A switches for sound and motors. This will require upgrades to SDG&E equipment as well.
- Replace the existing panelboards and load centers which are near the end of their design life. Replace associated feeders and branch circuit conduit, wiring and wiring devices.
- Replace the transformer room door.
- Provide new fluorescent lighting throughout the facility. Replace incandescent downlights with compact fluorescent type. This will provide more efficiency, better control options and lower operating costs. Occupancy sensors and/or a lighting control panel should be installed to control the non-theatrical backstage lighting to promote energy savings.
- Upgrade backstage and seating area egress lighting and signage to comply with code illumination requirements. Provide a central emergency lighting inverter to power the seating area aisle lighting.
- Replace theatrical lighting.
- Install ground-fault interrupter type receptacles on roofs.
- Replace deteriorated liquid-tight conduit on rooftops.

Acoustical Improvements:

- Install a pair of roll-up doors (back-to-back) at the stage loading door.
- Install sound absorption materials at the stage area.
- Install sound absorption materials in front of or on the existing walls at the north side of the seating bowl to prevent sound reflection.
- Conduct "auralization" meetings to demonstrate acoustical performance of the bowl under various rehabilitation scenarios and finalize the scope of the rehabilitation/construction work.

Theater Improvements:

- Install new stage lighting. The stage lighting could be operated from the previous location at the second floor of the concessions/ticket building.
- Inspect the existing rigging system. Consider replacing the system if additional linesets are required.
- Provide new motorized fire curtain at the proscenium opening.
- Replace drapes, curtains, tracks, and theatrical fabrics.
- Install new orchestra pit lift.
- Install new wheelchair lift at orchestra pit.
- Provide new seats.

- Replace stage flooring with new sprung construction – resilient pads on sleepers with plywood underlayment.
- Improve site lines in the seating area by eliminating side seats that have a poor view.
- Replace aisle lighting.
- Remove existing concessions platforms in the seating area and provide a new permanent concession booth at the bottom of the seating bowl.
- Provide a pair of roll-up doors (back-to-back) at the stage loading door.
- Inventory, clean, and properly store costumes.
- Provide new in-house mix position of sound equipment with troughs to major equipment locations.

Long-Term Rehabilitation Recommendations (To Be Completed After 2015):

Site/Office Building:

- Construct new detached office and shop building on the south side of the site (behind the bowl). Office space should accommodate 4-5 staff and include a small conference room and a staff restroom. The total size of the building including offices and shop should be approximately 3,000 square feet. Staff parking will be required adjacent to the building including one van accessible parking space.

Box Office and Concessions Building:

Option One (Base Bid):

- Demolish existing box office building and 1961 wall and construct new building to contain concessions and a ticket office. Incorporate a new marquee and electronic billboard in the design oriented toward the main parking area and pedestrian access point (on the northwest corner of the site). The new building would be approximately the same size as the existing building, but it would not contain office space.

Option Two (Alternate):

- Retain and remodel existing box office building. Flip ticketing and concessions so that the ticket windows are on the north half of the building, facing the main parking area and pedestrian access point on the northwest corner of the site. Install new marquee and electronic billboard above the new ticketing windows. The new concessions area (on the south half of the building) will open to the bowl side (instead of the plaza side of the building). Demolish the existing 1961 free-standing wall and install new gates at the center entrance and at north and south sides of the building for access control to the bowl. Depending on the scope of the remodel, there is a possibility that this work could be done prior to 2015.

Acoustical Improvements:

Option One (Base Bid):

- Design and construct new seating bowl canopy to cover approximately 2/3 of the seating area reducing airplane noise by 16-22dB in the seating area. The new cover would integrate theater lighting and sound systems.

Option Two (Alternate):

- Design and construct new seating bowl canopy to cover approximately 1/2 of the seating area reducing airplane noise by 0-20dB in the seating area. The new cover would integrate theater lighting and sound systems.

Historical Review Process:
Because the Starlight Bowl is listed as a contributor to the Balboa Park National Historic Landmark District, all proposed construction will require review and approval by the City of San Diego's Historical Resource Board (HRB). Compliance *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (*The Standards*) will be required.

Generally, the improvement recommendations included in this section can be considered "rehabilitation" per *The Standards*. *The Standards* for rehabilitation recognize that some alterations and new additions may be required to assure continued use of a building. New additions such as the seating bowl cover, office/shop building, and potentially the new concessions building (if the owner chooses not to restore the existing building) must be designed in accordance with *The Standards*. This means that any new addition should not destroy historic features, it should be differentiated from the original construction, and it should be compatible with the historic materials, features, size, scale, proportion, and massing to protect the integrity of the property and its environment. Additionally, new additions should be designed in such a manner that, if removed in the future, the essential form and integrity of the historic building and its environment would be unimpaired

Historic fabric at the Starlight Bowl is generally limited to the seating bowl itself and the original bandshell which is hidden behind the non-historic 1995 construction. Other areas of the bowl including the fly loft addition, site walls, the concessions/ticket office building, and both restroom buildings were added after 1961 and they are not historic. Therefore, the non-historic elements can be altered without negatively impacting the historical character of the property.

The HRB will want to limit new construction that is visible from adjacent sites. It appears that any new canopy would be visible from adjacent parking lots. However, the Starlight Bowl has a limited amount of remaining historic fabric and most of the visible features are not historic. These non-historic features generally detract from the historical character of Balboa Park. Therefore, it appears feasible that a cover could be approved by the HRB, especially considering that the theater would otherwise likely remain vacant for the foreseeable future due to the problem of airplane noise. All parties would recognize the benefit of returning the bowl to a state of usefulness as a vibrant attraction for the park. Care should be taken during the design phase to make sure that any new additions compliment the historical character of the property. The HRB should be consulted early in the design process to ensure that they are in agreement with the basic design concepts.

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SECTION VI – STRUCTURAL ASSESSMENT

Prepared by Critical Structures, Inc.

March 26, 2013 (revised)

Mr. Carmen Pauli
Principal Architect
Heritage Architecture & Planning
625 Broadway, Suite 800
San Diego, CA 92101
Via email: carmen@heritagearchitecture.com

Subject: Structural Condition Assessment of the Starlight Bowl, located at Balboa Park, San Diego, CA
Project No. 13-404

Dear Carmen:

We are pleased to present this report related to the Structural Condition Assessment of the Starlight Bowl, located in Balboa Park, San Diego, CA.

Introduction

Critical Structures, Inc. (CSI) performed a site survey on February 13, 2013, to review readily accessible areas of the buildings; no probes or testing were performed. The purpose of this structural condition assessment is to observe the type and condition of the existing structural systems, current code compliance, and provide repair/upgrade requirements and recommendations for the bandshell, stage framing, orchestra pit, stagehouse, seating bowl, restroom, and concession buildings.

We reviewed the following pertinent documents:

- Partial Original Structural and Architectural Drawings for the California Pacific International Exposition, prepared by Division of Architecture, dated 1935.
- Architectural Starlight Bowl Improvement Plans for the Stagehouse Addition, prepared by Richard Bundy and David Thompson Architects, dated 1995.
- Structural Starlight Bowl Improvement Plans for the Stagehouse Addition, prepared by Stedman & Dyson Structural Engineers, dated 1995.

The bandshell structure and seating bowl are listed on the National Register of Historic Places.

Structural Systems and Enclosure

The overall site footprint is approximately 320' wide in the north-west – south-east direction and 300' deep in the north-east – south-west direction. The ticket and concessions buildings are located at the north-west side of the site with the bandshell and stagehouse at the opposite end on the south-east side of the site and the seating bowl between them. One restroom building is located on either side of the seating bowl. The main entrance to the bowl (photo 1) faces the north-west toward the adjacent San Diego Air and Space Museum.

Ticket and Concessions Buildings

These two buildings were not original and were added on after 1961, replacing an original single ticket booth that was part of the security wall at the top of the seating bowl. They are approximately 60' long in the north-east – south-west direction and 18' deep in the north-west – south-east direction and are connected with a common 2nd floor that spans over a 30' gap between the buildings (photo 2). The buildings are predominately framed in wood with intermittent use of steel support in the form of pipe columns and parapet bracings. The total square footage is approximately 1,800 SF.

The lateral system consists of exterior stucco walls and interior bearing walls.

The exterior walls are finished with stucco. The roof is composite shingle on the sloping areas and tar and gravel construction in flat areas and supports several mechanical units.

Restroom Buildings

The two restroom buildings located on either side of the seating bowl were not part of the original 1935 plans and were added in after 1961. The buildings are approximately 26' wide by 40' long. They are constructed with masonry walls and wood roofs. Interior light framed bearing walls separate a women's and men's restroom within each structure. The square footage of each building is approximately 1,000 SF.

The lateral system for these buildings consists of exterior masonry bearing walls.

The exterior walls are finished with stucco while the interior is left exposed painted masonry. The roof is tar and gravel construction with a continuous parapet of approximately 2' in height.

Seating Bowl

The seating bowl occupies the space between the concessions buildings and the stage and rises approximately 35' from the stage to the top of the bowl. The construction is concrete slab on grade.

Stagehouse and Orchestra Pit

The stagehouse, orchestra pit, and stage framing beneath the new stagehouse were constructed in 1995 as part of the Starlight Bowl improvement project. The stagehouse is approximately 144' long in the north-east – south-west direction and 32' long in the north-west – south-east direction. The stagehouse is primarily constructed of structural steel. It abuts directly to the front face of the original bandshell and covers the location of the original stage projection. It projects above the height of the bandshell to approximately 65' above grade. New stage framing is constructed of wood joists framing to steel girders and columns as well as the new and existing concrete foundation walls. The new stage framing is located center stage and is approximately 54' wide. Flanking the new stage framing is slab on fill. Directly in front of the stagehouse, the orchestra pit is framed of light gage steel tubes and wood frames. The pit is open to the elements with a concrete slab on grade floor and a floor drain. Plywood flooring covers the stage and pit areas. The stagehouse covers a stage area of approximately 4,650 SF. The orchestra pit is approximately 715 SF.

The lateral system of the new stagehouse consists of structural steel braced frames (photo 3) and grade beams.

The exterior of the stagehouse is finished in metal panels with a partial stucco façade providing a decorative finish at the opening to the stage. The roof of the stagehouse is 18GA – 1.5" metal deck.

A lighting truss added in at a later date is supported on two steel pipe columns and braced back to the stagehouse with steel beams. It is approximately 20' from the face of the stagehouse and the center section of truss is supported with tension wires and rigid poles to the stagehouse (photo 4).

Original Bandshell and Attached Structure

The bandshell was constructed in 1935 primarily of wood with concrete foundations. The structure is irregular in shape and is approximately 131' long in the north-east – south-west direction and 51' deep in the north-west – south-east direction. The structure is one story with a basement and it is built into the side of a hill. The bandshell, located in the center section of the structure at the 1st story, is constructed of heavy timber trusses. Flanking the bandshell are dressing rooms on either side. Storage space is located behind the stage. The basement is constructed with concrete foundation and retaining walls as well as heavy timber columns. The floor above is framed with wood joists and straight and diagonal sheathing. At the southern corner of the structure a later period wood deck extends off the 1st floor level and has a stairway to grade. The first floor is approximately 2,800 SF of stage area and 2,600 SF of dressing room and storage area. The second floor is approximately 4,800 SF of dressing room and storage area as well as approximately 1,500 SF of storage area located under the new stage framing beneath the new stagehouse accessed via a hole cut into an existing north-west foundation wall (photo 5).

The lateral system consists of exterior stucco walls and interior and exterior reinforced concrete foundation walls.

The exterior walls are finished with stucco. The roof of the bandshell is composite shingle and the flat roof areas are tar and gravel.

Condition

All of the main structures appear to be in generally good condition.

No cracks were observed in any of the buildings that would indicate any evidence of foundation settlement.

The below are a list of observed deficiencies in each of the structures.

Ticket and Concessions Buildings

Stucco on exterior walls is deteriorating in some locations (photo 6).

Restroom Buildings

Roof joists were not observable at the time of inspection and we do not have structural plans for the restroom structures. Based on our experience with similar structures built during the same time

period, we assume that the masonry bearing walls are not adequately anchored to the roof diaphragm.

Seating Bowl

Due to lack of sufficient expansion joints and possible ground movement, there are several large groups of cracks that have formed in the slab on grade (photo 7).

Several wood platforms that rest on the seating bowl do not appear to have any positive connection to the concrete (photo 8).

Stagehouse and Orchestra Pit

Plywood on top of the stage floor and around the orchestra pit is warped and damaged (photo 9).

The wood structure in the orchestra pit rests directly on concrete slab and the area does not have adequate drainage (photo 10).

The lighting truss addition lacks lateral bracing.

Original Bandshell and Attached Structure

Plywood covering the stage floor is warped and damaged.

Wood beams in several locations bear on concrete foundation walls with no positive attachment (photo 11).

Concrete piers are spalling in some locations (photo 12).

The deck at the rear of the building is dilapidated and in disrepair. Posts are leaning over and decking is broken (photos 13 & 14). The stairs to grade are damaged and several treads are broken.

A stair at the rear of the building is missing (photo 15).

Conceptual Structural Rehabilitation

Other than the requirements of the Building Code to maintain in a safe and sanitary condition, because the building has no proposed change in use or occupancy, there is no trigger for mandatory rehabilitation to current code. There are prioritized recommendations for repair below:

Immediate

Exterior stucco on the concessions buildings should be patched and repaired.

Probes should be opened in the restroom buildings to determine the condition of the out of plane anchorage of the masonry walls to the roof diaphragm. In the event that no anchorage is found, a registered structural engineer should be retained to provide the calculations and drawings to provide a proper out of plane anchorage detail for the two buildings.

Cracks in the seating bowl should be evaluated and any cracks that pose a tripping hazard should be patched to remove such a hazard.

Proper stand-off post bases should be provided for the wood platforms on the seating bowl.

Damaged plywood on the stage floor should be pulled up and subfloor inspected. All damaged wood should be replaced with new.

The lighting truss post supports should be braced laterally with either guy wires or x-bracing. Calculations should be performed by a registered structural engineer to ascertain the adequacy of the existing structure to support the loads imposed on it.

Positive connections should be provided for all wood beams bearing on concrete that currently have none.

Concrete piers and other spalling foundation elements in the basement of the bandshell structure should be cleaned and patched with a mix that includes a corrosion inhibitor. Any exposed steel reinforcement should be cleaned and coated with a corrosion inhibitor before applying patch.

The wood deck at the rear of the original bandshell structure should be removed and replaced with a new structure designed by a registered structural engineer for seismic loads.

The missing staircase at the rear of the bandshell structure should be replaced or the door removed and sealed.

Midterm (within five years)

All cracks in the seating bowl should be sealed and patched.

Drainage should be improved within the orchestra pit. Curbs should be built such that all wood is at least 6" above slab level. If left in its current condition, the wood will deteriorate and rot.

All wood in the orchestra pit and seating bowl platforms in direct contact with concrete should be replaced with pressure treated lumber.

Voluntary Rehabilitation

A waterproofing consultant should be retained to ascertain the condition of the existing roofs on each of the buildings and provide recommendations as to their condition and continued use.

To mitigate an acoustics issue due to being located directly in the flight path of Lindbergh Field, a sound attenuation canopy has been proposed to cover the seating bowl. The structure of this canopy would be steel trusses to spanning to large steel columns on either side of the seating bowl. The structure would require deep foundations for the new columns to flagpole above grade.

Rough Order-of-Magnitude Structural Cost Estimates

The following cost estimates have been provided to assist in developing an initial projection of the cost of rehabilitation of the building for continued use. Please note that the estimates are preliminary rough-order-of-magnitude estimates.

The recommended repairs represent possible corrective strategies. Alternative and/or additional repairs could be developed in conjunction with subsequent analyses or as part of a comprehensive report. These recommendations should not be mistaken for construction documents that would follow a more rigorous analysis and design.

The cost estimates summarized below, represent the cost for repairs outlined above only. Architectural and structural evaluation, design and documentation costs for the rehabilitation will be additional. To determine a total project cost, the soft costs (professional design fees, agency and utility fees, and agency approvals), architectural, mechanical, electrical, plumbing, ADA, fire life safety costs, hazardous materials testing and abatement, and interior improvement construction costs shall also be accounted for as appropriate.

Required Structural Repairs

Stucco Patch & Repair	$2,000.00
Probes in the Restroom Buildings	$4,000.00
Repair Tripping Hazards in Seating Bowl	$5,000.00
Provide Stand-Off Post Bases for Platforms	$5,000.00
Remove and Replace Damaged Plywood at Stage	$8,000.00
Provide Bracing for Lighting Truss	$3,000.00
Provide Positive Connection for Wood Beams in Basement	$3,000.00
Repair Spalling Concrete and Exposed Rebar	$5,000.00
Replace Rear Deck at Bandshell Structure	$6,000.00
Replace Missing Stair and Rear of Bandshell Structure	$1,500.00
Contingency @ 20%	$8,500.00
TOTAL (Structural Only)	$51,000.00

Recommended Voluntary Rehabilitation

Repair Cracks in Seating Bowl	$10,000.00
Improve Drainage in Orchestra Pit	$8,000.00
Provide Curbs in Orchestra Pit	$4,000.00
Contingency @ 20%	$4,400.00
TOTAL (Structural Only)	$26,400.00

Again, please note that the above costs are structural costs only and should be considered in conjunction with other project costs as described above.

Conclusions

The original building is in good condition and is structurally stable. The majority of the existing construction is in adequate condition to be re-used for many more years should the recommendations of this report be followed.

This report does not express or imply any warranty associated with the existing structure and was developed based upon visual observations made during the site visit to the building.

We trust this letter report responds to your current structural engineering requirements. Please do not hesitate to contact us if you have any questions or require additional information.

Very truly yours,
Critical Structures, Inc.

Stephen Fong, P.E.
Project Manager

Eric C. Stovner, S.E., LEED AP
President

REGISTERED PROFESSIONAL ENGINEER
ERIC CHRISTIAN STOVNER
No. S 4204
STRUCTURAL
STATE OF CALIFORNIA

Photo 1 – Starlight Bowl Main Entrance

Photo 2 – Concessions Building 2nd Floor

Photo 3 – Stagehouse Braced Frames

Photo 4 – Light Truss

Photo 5 – Hole Cut Through Existing Foundation Wall

Photo 6 – Concessions Building Stucco Damage

Photo 7 – Seating Bowl Cracks

Photo 8 – Wood Posts On Seating Bowl w/No Attachment

Photo 9 – Damaged Stage Floor Plywood

Photo 10 – Orchestra Pit Water Issues

Photo 11 – Wood Beams on Concrete

Photo 12 – Concrete Pier Spalling

Photo 13 – Rear Deck Posts

Photo 14 – Rear Deck Decking

Photo 15 – Missing Rear Stairs

SECTION VII – MECHANICAL & PLUMBING ASSESSMENT

Prepared by Randall Lamb

STARLIGHT BOWL THEATRE
MECHANICAL AND PLUMBING CONDITION ASSESSMENT

Prepared for:

HERITAGE ARCHITECTURE AND PLANNING
625 BROADWAY
SAN DIEGO, CA, 92101

by

Randall Lamb Associates

Phone (619) 713-5700

Fax (619) 713-5701

Project No.: SD12146.00

DATE 3/21/2013

RANDALL LAMB

4757 Palm Avenue, La Mesa, California 91942-9252
Engineers – Mechanical, Electrical, Plumbing, Communications, Lighting Design
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I. GENERAL BUILDING DESCRIPTION

The Starlight Bowl was originally constructed in 1935 with a stage house, backstage area, and outdoor seating area. Multiple remodels have occurred since then with the last one occurring in 1995. This added a new stage house and orchestra pit. The starlight bowl now consists of two outdoor restroom buildings, a ticket booth, concessions stand, stage house, backstage area, and an outdoor seating capacity of approximately 3,620. There are no documents available for mechanical and plumbing systems.

The following study provides an evaluation of the existing HVAC and Plumbing system infrastructure serving the Starlight Bowl in San Diego, CA. The recommendations outlined within this study are based on site observations, existing record drawings and the current building codes.

II. CURRENT BUILDING CODES

A. 2010 California Administrative Code
Part 1, Title 24, California Code of Regulations (CCR)

B. 2010 California Building Code
Part 2, Title 24, CCR
(2009 International Building Code)

C. 2010 California Mechanical Code
Part 4, Title 24, CCR
(2009 Uniform Mechanical Code)

D. 2010 California Plumbing Code
Part 5, Title 24, CCR
(2009 Uniform Plumbing Code)

E. 2010 California Fire Code
Part 9, Title 24, CCR
(2009 International Building Code)

F. California Code of Regulations (CCR), Title 24, Part 2, Chapter 53, Energy Conservation in New Buildings.

III. EXECUTIVE SUMMARY

Randall Lamb was assigned the task of evaluating the mechanical and plumbing systems condition of this San Diego, California facility built for the 1935-1936 California Pacific International Exposition. Parts of this facility are approximately 80 years old and have seen very little improvement during many years of service. Many of the areas are not up to the current 2010 Version of the California Building Code. There has been some plumbing remodeling and reconfiguration in the past which is not documented. There is a lack of ventilation in the backstage areas as well as the public bathrooms.

IV. OBSERVATIONS MECHANICAL AND PLUMBING

Mechanical Systems

The backstage area is ventilated by a single 12″ duct and inline fan (photo #1) providing outside air to the entire space. A single residential wall register located on the exterior of the building (photo #2) serves as the intake for this fan. This is the only source of mechanical ventilation in the entire building which appears to have been added. At one time the only ventilation was windows and air transfer vents (photo #3) through the walls to connect outside air to the rooms.

In the basement there is an old Curtis Toledo horizontal air compressor (photo #4) which was apparently used to serve equipment on the stage. The compressor appears to be in working condition but needs servicing. There is no ventilation to compensate for the compressors heat generation.

There are two bathrooms (photo #5) and showers (photo #6) with adjacent dressing rooms that have no ventilation. There is also a restroom near the east end of the lower level that has no ventilation as well. The ventilation in the entire backstage area is not in accordance with the 2010 CMC code Table 4-1(ASHRAE 62.1). This code references standard minimum ventilation rates in breathing zones.

At the entrance and northwest side of the property there are two buildings, one for tickets and offices, and the other for concessions (photo #7). The structures are joined at the roof forming a covered entrance to the theater. Both spaces have mechanical ventilation served by two RUUD rooftop package units which are constant volume single zone type (photo # 8 & 9). The RUUD rooftops appear to be 5 ton capacity cooling only type units. This could not be confirmed as the nameplate is corroded. It appears these units were installed in the early 1980's but this also could not be confirmed. The unit distributes supply air into the restroom, offices and ticketing area of structure via ductwork located on the roof. Connections in the ductwork are very poor indicating there may be substantial duct leakage. These units are at the end of their useful life.

There is also a roof mounted condensing unit (photo #10) that serves coolers in the concession area. The condenser is in poor deteriorated condition. The blades and coil fins are corroded and filled with leaves and debris. The structural base of the fan is constructed of wood and rotted out in certain areas creating an uneven support structure.

The restroom located inside the ticket building has supply air from the rooftop package units but is lacking a toilet exhaust fan which is code required.

The public restroom facilities were constructed with no ventilation system. Currently each side of the restroom has only a gravity vent on the roof(photo #11). The door to the restroom is not vented which indicates make up air to the room was not considered (photo#12). These restrooms do not meet ventilation requirements (CMC Table 4-1, ASHRAE 62.1).

Plumbing Systems

There are two public restroom buildings on the east and west side of the theater seating area. Each restroom building contains a men's and women's facility as well as one drinking fountain at the entrance to each building (photo #13). Each woman's restroom contains eight (8) water closets (photo # 13) and three (3) hand washing sinks (photo #14). The men's restrooms contain two (2) water closets and eight (8) urinals (photo #15) with two (2) hand sinks (photo 16). The California Plumbing Code 2010 Table 4-1 based on the occupancy of this facility requires:

	Code Required Fixtures		Current Fixture Count
5	Public Male Hand Sinks	4	Public Male Hand Sinks
5	Public Female Hand Sinks	6	Public Female Hand Sinks
8	Public Urinals	16	Public Urinals
6	Public Male Water Closets	4	Public Male Water Closets
22	Public Female Water Closets	16	Public Female Water Closets
9	Public Drinking Fountains	2	Public Drinking Fountains

The facility falls short of the required fixtures by the current code. The restroom facilities will need to be enlarged or rearranged to satisfy the requirements.

Both restroom buildings have no hot water to the hand washing sinks as the hot water side if the faucet is not connected (photo #17). The hot water piping appears to be in the wall but not connected. There is no hot water heater in the restroom buildings. The fixtures appear to be from the 1970's period. We could not identify the age of the structures as no documents are available.

What piping we could see looked fair but we had no way to do any testing or evaluation of the remaining lifespan and we could not confirm the age.

The ticket booth building has a restroom for staff located at the west end of the facility. There is a hand sink and a single water closet in this restroom. There is no hot water or water heater. We could not get access to the concession facility to verify the hand sink or other plumbing in that portion of the building.

In the basement of the backstage area there is a washer, dryer, and laundry sink (photo #18) used for washing costumes and other stage props. These fixtures are located extremely close to the main switchgear in the room with no wall. There is also no floor drain to catch any overflow or leak from the laundry equipment. This creates a hazardous situation.

There are two bathrooms (photo #5) and showers (photo #6) with adjacent dressing rooms located in the basement backstage area and a restroom near the east end of the lower level. The restrooms are very aged and require upgrading. The plumbing is multiple ages and needs to be replaced. We saw old original cast iron, no hub cast iron and ABS piping used for the drain, waste and vent systems.

Domestic water is piped with copper and galvanized piping (photo #19) .There is galvanized connected to copper without dielectric unions to prevent corrosion.

The drain waste and vent piping in the entire facility needs to be camera inspected to develop ascertain its true condition and develop a scope of work. Plans and documentation should be developed after the piping system is explored.

Surface drains located at the base of the theater seating to catch rainwater and wash down water appear to be clogged. We would also recommend rodding and camera inspection of these storm drain pipes.

V. RECOMMENDATIONS

Mechanical Recommendations

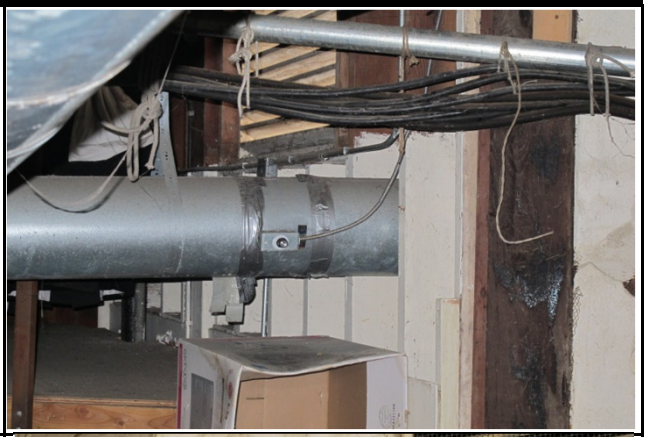
- Install a new code compliant ventilation system to serve all of the backstage areas of the facility. We also recommend installing air conditioning as part of this system.
- Install powered exhaust fans for all the restroom and shower facilities to provide the code required amount of exhaust air.
- Install new rooftop units and ductwork for the ticket office and concessions building.
- Install exhaust fan for the ticket office restroom.
- Install exhaust fans for both public restroom buildings and provide the appropriate make up air opening in the door or the roof.
- Provide exhaust for air compressor if reused.
- Provide DDC control system for all new ventilation equipment.

Plumbing Recommendations

- Reconfigure or enlarge the public restrooms facilities to accommodate the code required amount of fixtures in accordance with the California Plumbing Code.
- Install hot water heater and necessary plumbing for hand washing sinks.
- Clean and verify all sanitary drain piping using a sewer camera. Build as built documents based on the findings. Use the testing to determine what piping needs to be replaced.
- Clean and verify all storm piping using a sewer camera. Build as built documents based on the findings. Use the testing to determine what piping needs to be replaced.
- Replace all domestic water piping based on condition and poor installation practices.
- Replace bathrooms in basement backstage area due to condition and age of the piping and fixtures.
- A substantial budget should be carried for plumbing until the condition of the piping is verified.
- If required in future plans, relocate the laundry room away from the electrical switchgear.
- Bring the plumbing in the concession area up to current code and supply hot water for the hand washing sinks.

RANDALL LAMB

VI. PHOTOGRAPHS

Location	Observations	Photo
Photo #1 Backstage Lower Level	Inline booster fan located inside this ventilation duct is the only piece of mechanical ventilation in the backstage areas.	
Photo #2 Backstage Lower Level Outside	The white louver in this photo is the intake for the fan in photo #1.	
Photo #3 Backstage Lower Level	Air transfer opening in basement storage room. Not mechanical ventilation, gravity only.	

Photo#4 Backstage Lower Level	Air compressor in basment of backstage storage area. Looks like it was used possibly for effects onstage. There is no ventilation in the area to reject the heat.	
Photo #5 Backstage Lower Level	Backstage mens bathroom in rough condition.	
Photo #6 Backstage Lower Level	Gang shower stall in basement of backstage area.	

Photo #7 Northwest Entrance	Covered entrance at northwest side of property. Ticket booth is on the right and concessions on the left.	
Photo #8 Ticket Booth	Roof top equipment serving ticket booths and office	
Photo #9 Concessions	Roof top equipment serving concessions.	

Photo #10 Concessions	Refrigeration condenser unit for concessions.	
Photo #11 Restrooms Building	Gravity air transfer ducts above mens and womens restrooms.	
Photo #12 Womens Restroom Building	Entrance to women's public restroom. Note there is no air transfer opening in the door.	

Photo #13 Womens Restroom Building	(8) water closets in each women's public restroom.	
Photo #14 Womens Restroom Building	(3) Hand washing sinks in each women's public restroom	
Photo #15 Mens Restroom Building	(8) Urinals and (2) water closets in each men's public restroom.	

Photo #16 Mens Restroom Building	(2) Hand washing sinks in each men's public restroom	
Photo #17 Womens Restroom Building	Plumbing fixture in women's restroom. Note there is no hot water in the restrooms(not required by code, but recommended).	
Photo #18 Backstage lower level	Washer, dryer and sink located right next to switchgear in basement of backstage storage area. This is installed next to the main electrical switchgear and should be relocated to avoid the risk of flooding the electrical gear.	

Photo #19 Backstage Lower Level	Old plumbing in basement of backstage storage area. Mixture of galvanized and copper.	
Photo #20 Backstage Lower Level	Electric hot water heater located inside bathroom	
Photo #21 Backstage Lower Level	Pipes in dressing room showing rust and previous leaking. Original abandon pipes in the backround.	

Photo #22 Crawl Space Under Stage	Waste line and cleanout located at floor. Appears to be original construction. Also note the galvanized and copper piping connected together with no dielectric union to protect from electrolysis.	
Photo #23 Backstage Lower Level.	Sprinkler piping being used to route wires is a code violation. Nothing should ever be attached to sprinkler piping.	

SECTION VIII – ELECTRICAL ASSESSMENT

Prepared by Michael Wall Engineering, Inc.

Electrical Survey Report

Balboa Park - Starlight Bowl Theater

2005 Pan American Plaza
San Diego, CA

Prepared by:

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Introduction

This report is intended to evaluate the overall condition of the electrical equipment at The Starlight Bowl Theater located in Balboa Park at 2005 Pan American Plaza, San Diego, California 92101. The Theater consists of four separate buildings; a Stagehouse building, a Concessions/Ticket Booth/Office building, and two detached restroom buildings. The systems reviewed include:

- Incoming electrical service equipment (where accessible)
- Electrical service and distribution equipment
- Branch panelboards and loadcenters
- Power distribution
- General lighting conditions
- Telephone/Data
- Fire alarm
- Intrusion (Security)

The on-site, investigative survey was conducted on Wednesday, February 20, 2013, with a follow-up visit on March 1, 2013 and consisted of visual and non-invasive observation only. Concealed equipment and wiring was not evaluated. The Ticket Booth area was not accessible for investigation due to a damaged lock cylinder preventing access.

The following were used in the preparation of this report:

- Partial as-built electrical drawings of a 1995 renovation project
- Observations from field investigation

Executive Summary

The findings based on the above systems are the following:

STAGEHOUSE BUILDING:

A. The existing electrical service switchboard at the Stagehouse Building is rated at 800A, 208Y/120V, 3Ø, 4W. Its capacity is inadequate to serve the recommended equipment upgrades and is near the end of its life expectancy.
B. The San Diego Gas & Electric (SDG&E) service lateral conductors are installed below grade.
C. The existing SDG&E meter is a conventional electro-mechanical kilowatt-hour meter without demand kilowatt (kW) load measurement.
D. Portable stage lighting is served by a 600 ampere 3 phase feeder.
E. Minor portions of the electrical distribution equipment are of the original installation and is in questionable condition. No testing was performed.
F. The 3 phase 600 ampere, 36 module Stage lighting dimmer rack is manufactured by Electronics Diversified, Inc. (EDI). Each module contains four 2.4kW 120 volt dimmers.
G. The existing four-zone conventional Fire Alarm system is manufactured by Silent Knight, model 5104.
H. The existing intrusion system is manufactured by Sonitrol.

CONCESSIONS/TICKET BOOTH BUILDING:

A. The Concessions/Ticket Booth building is fed from the Stagehouse 208Y/120V 3Ø 4W electrical distribution system via a 200 ampere 3 phase feeder.
B. There is no main building disconnecting means installed.
C. Indoor lighting consists of 4 foot linear surface mounted fluorescent fixtures on the first floor and incandescent downlights on the second floor.
D. Outdoor lighting is a mixture of quartz floodlights and incandescent open reflector downlights with retrofitted self-ballast compact fluorescent lamps.
E. The existing intrusion system is manufactured by First Alert.
F. An Public Address system has been provided. Plastic grills on the flush mounted outdoor public address speakers are damaged.
G. Some indoor and outdoor receptacles and junction boxes have damaged or missing faceplates.

GENERAL:

A. Panelboards and loadcenters in both buildings are of newer vintage, manufactured by Square D, type QO and appear to be in good physical condition. Blanking plates are missing for some panelboard branch circuit spaces.
B. The grounding electrode system for both buildings, if it exists, is concealed and could not be verified or evaluated.
C. Indoor non-theatrical lighting is generally 4 foot linear fluorescent with T12 lamps.

Description & Analysis of Existing Electrical Systems

Power Distribution – Stagehouse Building

The facility is served underground from an SDG&E manhole at the north side of the building. The door has been removed from the transformer room and plywood has been screwed to the frame in its place. The discarded door with High Voltage warning signage and SDG&E vault number was found on the ground nearby.

The Utility's electro-mechanical kilowatt-hour meter #68-17384 is located on the exterior north face of the building at ground level. This is not a demand-style meter. Therefore the existing service demand loading cannot be determined or evaluated from this meter or Utility Company records.

The underground service terminates in a UL listed Industrial Electric Manufacturing (IEM) 800A 208Y/120V 3Ø 4W NEMA 1 main switchboard with 800A bolted-pressure main switch, located in the basement. There are five three-pole feeder circuit breakers installed, with space for additional circuit breakers. The short-circuit current rating (SCCR) was not listed on the switchboard label. There are no labels present indicating that any preventative maintenance or testing has been performed and no warning labels exist regarding arc flash precautions.

The switchboard supplies power to the Stage Lighting dimmer rack, five Stagehouse panels and the two concessions building panels. Multiple feeders originating at the main switchboard are installed

in the open with improper supports and are subject to physical damage; a violation of the California Electrical Code. One exposed feeder is labeled as a 100A tap to a 600A Switchboard circuit breaker, which is an illegal tap because it is not installed in conduit.

Exposed portions of power conduits consist of electrical metallic tubing (EMT) with both setscrew and compression type couplings used.

Covers are missing from some power junction boxes, pullboxes and wireways.

Some exterior receptacles are missing the hinged portion of their weatherproof faceplates.

Power Distribution – Concessions/Ticket Booth/Office Building

The ticket booth/office portion of the building contains two (2) 200A thirty-circuit Square D type 'QO' 208Y/120V 3Ø 4W NEMA 1 main-lug-only loadcenters. No loadcenter name designations were found. Handwritten loadcenter branch circuit directories exist but were not verified.

This building contains both 15A and 20A ivory duplex receptacles; both flush and additional surface mounted receptacles on surface raceways. Some raceway covers and associated receptacles are loose and present a hazard.

The faceplate was missing from some junction boxes and receptacles, leaving receptacle wiring terminals exposed. One receptacle and faceplate was blackened by a previous short circuit.

Control wiring to rooftop air conditioning units on the Ticket Booth/Office building is improperly installed without strain reliefs, box covers or weathertight cable seals. The PVC covering on liquid tight conduit installed on the roof is deteriorating and is no longer weather resistant.

An abandoned air conditioning condensing unit was found on the roof vandalized with unit covers missing, leaving wiring exposed.

A non-GFI weatherproof receptacle has been provided at the south end rooftop air conditioning unit, but not at the unit at the north end of the building. Exterior receptacles are missing the hinged portion of their weatherproof faceplates.

The Concessions portion of the building was not accessible during either field visit.

Lighting – Stagehouse Building

General area lighting in dressing rooms consists primarily of 2'x4' linear fluorescent surface mounted acrylic wrap-around fixtures with T12 lamps and prismatic lenses. Some dressing rooms contain eight foot open fluorescent T12 strip lights. Lighting at makeup mirrors is provided by surface mounted four lamp incandescent vanity lighting fixtures with type "G" globe lamps on the left and right sides of each mirror.

General area lighting in the stage area is provided by quartz floodlights.

A three phase 600 ampere, 36 module Stage lighting dimmer rack manufactured by Electronics Diversified, Inc. (EDI) is located stage right. Each module contains four 2.4kW 120 volt dimmers. Since the stage area is not fully enclosed from the weather, this dimmer is subject to dusty conditions.

Exterior lighting is consists of quartz floodlights and abandoned incandescent PAR lamp floodlight lampholders. Temporary festoon style lighting was also found, with broken incandescent lamps and exposed lamp filaments.

Exit signage was sparse and contained a mixture of damaged incandescent signs and newer signage with battery backup and integral dual lighting heads. Emergency egress lighting was also sparse. It consists of wall mounted self-contained emergency "bug-eye" fixtures.

Some downlights in the pit area appear to have been vandalized and are missing components.

Lighting – Concessions/Ticket Booth/Office Building

Ticket booth and conference room lighting consists primarily of 1'x4' linear fluorescent surface mounted wrap-around fixtures with T12 lamps and prismatic acrylic lenses. The restroom contains a four foot open T12 fluorescent strip fixture. Second floor offices contain 50 watt 'R' lamp incandescent open reflector downlights with milligroove baffles. Some are retrofitted with self-ballasted compact fluorescent lamps. The trim ring was missing from one fixture.

Exterior lighting is a mixture of quartz floodlights, soffit mounted incandescent stepped baffle reflector downlights and wall mounted incandescent step lights, both with retrofitted self-ballasted 13 watt compact fluorescent lamps. The grille of most step lighting fixtures is damaged or missing due to vandalism. Exterior lighting appears to be controlled by Intermatic electronic timer wall switches.

No emergency egress path lighting was found.

Operation of the Ticket Booth/Office interior and exterior lighting could not be evaluated since the power to the building was turned off to avoid theft of electrical power.

Lighting – Seating Area

Egress path lighting is provided by a mixture of flush and surface wall mounted incandescent step lights, with most fed via surface mounted PVC conduit. Some fixtures are retrofitted with self-ballasted compact fluorescent lamps. The louver of most fixtures is damaged or missing due to vandalism. Some louvers have been replaced with Plexiglas cover lenses. Some have no lamp or lens installed, leaving the lamp socket exposed. All are fed by normal power branch circuits.

Lighting – General

Exterior building lighting was observed during the daytime visits with the system inactive. A nighttime analysis would be required to properly assess the lighting levels. A nighttime analysis was not included in the scope of this report.

Signal Systems – Stagehouse Building

The existing four zone conventional Fire Alarm system is manufactured by Silent Knight, model 5104. It is located back-of-house at the north end of the building. The existing intrusion system is manufactured by Sonitrol, located adjacent to the fire alarm panel. Wiring for both systems is installed without conduit.

Microphone cabling has been installed exposed in the pit area.

Signal Systems – Concessions/Ticket Booth Building

A telephone/networking closet is located at the north end of the first floor. A plywood backboard, Intrusion Control Panel and Vodavi Communications Starplus SP7000 Telephone Switch (Key System Unit) is installed in this closet. The telephone system Main Point of Entry (MPOE) is also located in this closet.

Telephone and data outlets consist of a mixture of original flush outlets, surface mounted "biscuit block" outlets fed with exposed wiring and open runs of data cable fished through walls and connected directly to network hubs and computer equipment.

The existing intrusion system is manufactured by First Alert. The lockable Control Panel is located in the Telephone Closet and includes a telephone connection for Central Station Monitoring. It is not known if this central station monitoring is currently operational. Rooms are equipped with wall mounted motion sensors. A Sonitrol LCD keypad is located at the building rear entry.

Indoor public address speakers are surface mounted. Outdoor speakers are flush mounted. Plastic grills on most outdoor public address speakers are damaged.

Signal wiring on the second floor is installed in metallic surface raceways. Some covers are missing and others are damaged.

Conclusions

The overall observed condition of the electrical distribution equipment is poor, not adequately maintained and is near the end of its life expectancy. It should be replaced. Its capacity is not sufficient for the upgrades proposed by the Theater Consultant and will require replacement for that reason alone. Feeder and branch circuit conduit and wiring, mostly original, should also be replaced.

Electrical Code violations must be corrected.

The lighting systems are in disrepair and should be replaced with new more efficient lighting and controls. Egress lighting and signage should be improved and provided with an emergency power source compliant with the California Building Code.

Recommendations

1. The existing 800A main switchboard is nearing the end of its expected life and is inadequately sized for the theater upgrades recommended by Theater Consultants Landry & Bogan. It should be replaced with a new and larger switchboard. This will require upgrades to SDG&E equipment as well.

2. Replace the existing panelboards and loadcenters which are near the end of their design life. Replace associated feeders and branch circuit conduit, wiring and wiring devices.

3. Replace the transformer room door.

4. Provide new fluorescent lighting throughout the facility. Replace incandescent downlights with compact fluorescent type. This will provide more efficiency, better control options and lower operating costs. Occupancy sensors and/or a lighting control panel should be installed to control the non-theatrical Stagehouse Building lighting to promote energy savings.

5. Upgrade Stagehouse and Seating area egress lighting and signage to comply with California Building Code illumination requirements. Provide a central emergency lighting inverter to power the seating area aisle lighting.

6. Replace theatrical lighting as discussed in the Theater Consultant's report.

7. Install ground-fault interrupter type receptacles on roofs.

8. Replace deteriorated liquid-tight conduit on rooftops.

END of REPORT

SECTION IX – ACOUSTICAL ASSESSMENT

Prepared by McCay Conant Hoover, Inc.

McKAY CONANT HOOVER INC
Acoustics and Media Systems Consultants

Ronald L McKay, FASA
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25April2013

Ms. Carmen Pauli, Principal
Heritage Architecture & Planning
625 Broadway, Suite 800
San Diego, CA 92101

Subject: **Final** Acoustical/Audio Report
Starlight Theater Environmental Noise Control Feasibility
San Diego, CA
MCH Project 13011

Dear Carmen:

This report summarizes our assessments associated with the feasibility of sufficiently mitigating environmental noise issues at the outdoor, historic Starlight Theater for both Musical Theater (and the like) and more heavily amplified pop concert programming. We base this report on our familiarity with the amphitheater site, internal discussions, discussions with you, Rose Steele and Wes Brustad as well as a fairly comprehensive examination of aircraft landing patterns and their current noise impacts on the site. We have not, as you know, examined prospective noise impacts from highly amplified events at the site to either residential neighbors or park patrons.

A. EXECUTIVE SUMMARY

1. Study Goals: The intent of our work was to identify in broad but sufficiently narrowed terms for a costing exercise, practical measures required to substantially ameliorate the long-suffering noise impacts of aircraft landing at nearby Lindbergh Field. We feel we have found the essence of a solution at least to materially improve the patron experience for Musical Theater and the like. While we strived to maximize seated patrons' exposure to the evening sky while minimizing problematic noise intrusion impacts, the practical limitations of physical acoustics and patrons' tendency to be easily distracted have conspired to provide considerably more visual closure than was likely hoped for. To the extent possible, we have attempted to minimize cost impacts as well.

2. Observations, Conclusions and Preliminary Recommendations: Currently, typical daytime ambient noise in patron seating is relatively steady around 48dBA. The spectral nature of this corresponds to Noise Criterion (NC) 43 – or not unlike the ambient levels found in busy corridors and hotel lobbies. Please refer to attached appendix materials that put these descriptors into layman's parlance. Briefly, the terms "dBA" and "NC" both represent subjective characterizations of apparent loudness wherein a 10 dB (or "point") change in either corresponds roughly to a doubling (or halving) of the apparent loudness, while a 3dB (or "3 point") change is just slightly noticeable in field conditions. During the loudest 10 seconds of a typical flyby, when the aircraft are passing directly southwest of the site - about

600ft to 700ft away, noise levels rise above the ambient by about 30dB to 80dBA (and the equivalent of NC78). Note that practically, an open enclosure or barrier cannot normally be expected to reduce such levels by more than 20dB, or perhaps 24dB under fully ideal conditions. That the freeway and aircraft noise impacts both enter the site from the south simplifies, at least in principal, the acoustical design approach and solution(s) but the geometrical forms of nearby structures that contribute to a somewhat more complex reflection (echo) pattern require closure at the rear to protect seating there. We examined a concept for partially enclosing (about 2/3 coverage) the worst-impacted region of audience and that appears to approach a 22dB reduction for the majority of audience for such a cover. This would still, as before, require a carefully considered "house" audio system (i.e. not a conventional rapidly flown "Roadshow" or touring audio rig) for Musical Theater, comedic acts, and lecture presentations, etc. The specifics of this audio system (which might slowly "ride" up (then down) to remove some of the worst "edge" of the highest intruding fly-by levels in a minimally-intrusive fashion) would be developed in programming and design. In the course of examining aircraft noise impacts as a function of their specific altitudes and tracks in light of the required canopy extent to block both jets' direct-line-of-sight to audience and subsequent strong reflections, we've determined that sound absorptive treatments would be required not only on or near one or two building surfaces but as well on the canopy underside to control reverberance within the partial enclosure to help assure good audio show. Additionally, closure of existing, large openings in the stagehouse is required as well as a heavy application of sound-absorptive treatments on much of its the inner surfaces. Finally, if it appears that the project should move forward, we describe the prospect of mocking up, via audio simulations, a rough facsimile of the "heard experience" under different scenarios, that might assist in comparing various components of solutions.

B. PROCESS

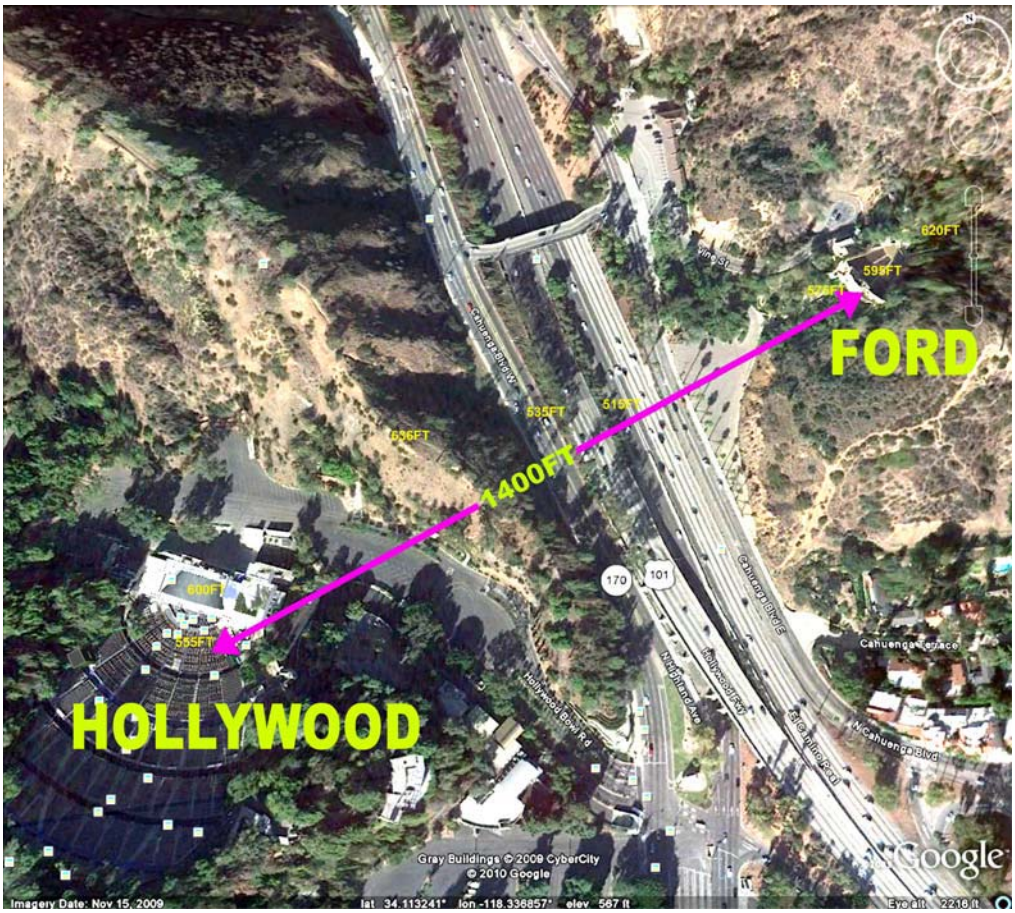
On 1 March 2013, we collected and recorded representative noise data (ambient noise and multiple commercial jet landings) throughout the seating using a calibrated, Type 1 sound level meter. We also collected both still and movie shots of the venue and representative fly-bys – and even collected a digital movie of a landing from an east-facing window seat looking down at the amphitheater from a flight landing that morning. To study required canopy extents and associated recommendations, we used the above data in conjunction with a 3D model of the Starlight Theater as viewed from 560ft (median altitude +/- 100ft) along the northernmost edge of landing patterns in Google Earth. This permitted our examining the extent of audience direct-exposure to engines so as to inform the extent of canopy coverage for both that direct line-of-sight protection and barrier-edge diffraction from the canopy edge.

Upon reducing the collected noise data and developing necessarily rough calculations of predicted noise reductions provided by canopies at $^{1}/_{2}$ and 2/3 coverage plus associated design requirements we were able to put into some context for final audio system assessment, the likely amplification implications for various programmed performance types.

C. OVERVIEW OF FINDINGS AND RECOMMENDATIONS

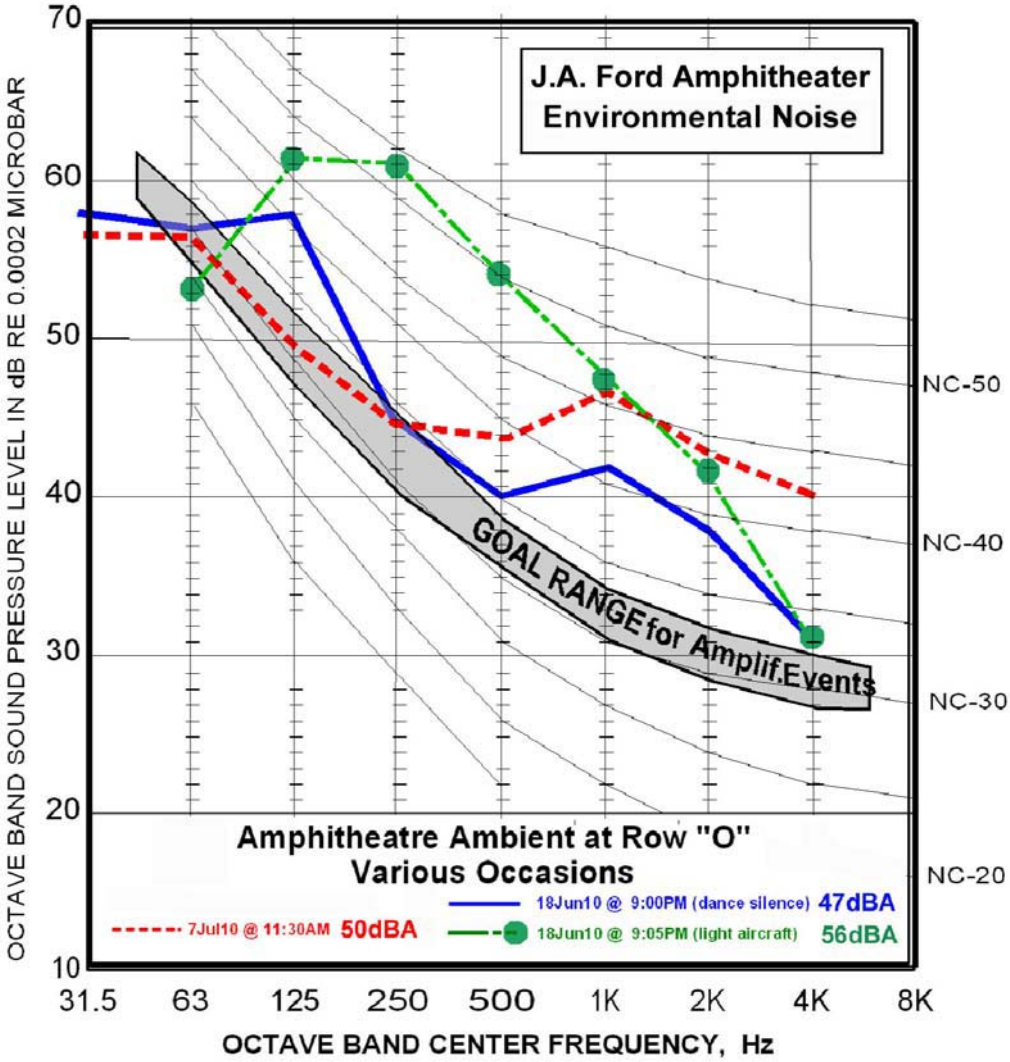
1. Background. For decades, the nature and level of noise impact during the (always amplified) events at the 3,600-seat Starlight Theater have been increasingly affected by noise impacts from aircraft landings at nearby Lindbergh Field. Actors and musicians would regularly "freeze" for the period of the fly-by distraction and continue when it dissipated, only to resume the freeze/thaw cycle multiple times through the performance. The intention of this acoustical study is to explore, encompassing all practical and inventive ways, tractable means of substantially mitigating these impacts including partial, to full canopy enclosure – and by this, inform a costing exercise. It was desired to maximize the sense of being open to the sky for at least what may be deemed a significant portion of the audience. It was understood that that some aircraft noise detectability and modest interruption may sometimes occur and be acceptable but a material, overall improvement in the audience listening conditions is paramount to moving forward with investing major dollars on facility renovation. In focusing on aircraft noise abatement while being prudent with fees, we did not address acoustical issues associated with interior spaces (back-of-house) or refinement of the acoustics of the orchestra pit, or the like.

2. Findings.
    a. Existing Levels (no canopy). Ambient noise levels are dominated by adjacent freeway traffic and, during the daytime, hover around 48dBA with a spectrum shape as indicated in Figure 1, and is fully compatible with normal level, casual conversation conducted at about 20ft distance. This spectrum corresponds approximately to NC43 (see comparative tables in Appendix), and is therefore a bit noisier than a typical busy corridor or lobby in an office or hotel building. It is certainly typical of many outdoor amphitheaters and entirely suitable for amplified, public events of all sorts. During fly-bys, typical maximum sound levels rise to about 80dBA (NC levels are so high, they become "undefined"), fairly uniformly throughout the seating, and although outdoor amplification systems can very easily overcome this intrusion, in the absence of being able, in this study, to carefully scrutinize typical live-sound (amplified) operator levels in the audience during typical Musical Theater events at the Starlight Theater, it appears from our examinations that there are likely a variety of factors that play into the reasoning to engage in the (historical) annoying "freeze/thaw" cycle during performances. The bottom of Figure 1 indicates the typical rise-and-fall cycle of the aircraft noise intrusion and indicates that the aircraft noise is clearly heard above the ambient level for about 20seconds with around 7 or so seconds within 10dB of the maximum, typical 80dBA level achieved.



b. <u>Comparisons with other Amphitheaters</u>. Hollywood's historic 1,200-seat John Anson Ford Amphitheater is another example of a long-established outdoor venue in a semi-urban context with a long history of family-fare entertainment and environmental noise impacts. Note that both the J.A. Ford and Starlight theaters are approximately the same distance from their major, offending noise sources (Hollywood Freeway and Lindbergh flight corridor)– i.e. 500-600ft. Nearly equidistant from the Ford across the Hollywood Freeway is the considerably larger 18,000-seat Hollywood Bowl. While J.A. Ford patrons are noticeably impacted by freeway noise (due to marginal topographic shielding of direct freeway noise and some effective amplification due to some "canyon" effect), the Hollywood Bowl is rather well-shielded from this by an intervening ridge, readily apparent via Google Earth. Both venues, however, are impacted during performances by light aircraft and helicopter noise (plus occasional sirens), although the Ford has been more significantly impacted because of its relatively lower level amplified sound levels given its different programming and size. Around SoCal, MCH personnel have attended evening programs at the Ford, the Hollywood Bowl, LA's Greek Theater and the Santa Barbara Bowl among others, and while we have no archival, measured noise data at any other than the J.A. Ford, we have found little if any, environmental noise impacts to report at these.

We depict in the graph below representative environmental noise attributes of the J.A. Ford during daytime and evening. Evening measurements were collected within audience seating and during specific moments as noted. The diagram was generated for a current project we have at the J.A. Ford and the "goal range" for ambient levels would be representative, in our opinion of venues like the Starlight. Larger outdoor venues with considerably higher amplified sound level programming delivered to audience could easily justify raising the shown range by as much as 5-8dB due to those higher levels and audience expectations. The blue curve is representative of an evening when an accident on the Hollywood Freeway generated a somewhat higher-than-normal ambient level due to unusual roadway "activity" there, about 600ft away. Both daytime and evening ambient levels can frequently get into the gray region there. Comparing the Ford to Figure 1 in this report, we note their current ambient levels are within about 1dB of each other while typical aircraft noise impact at the Ford is infrequent at 56dBA and at the Starlight (not infrequent) is 80dBA. This level difference (alone) corresponds to a subjective increase of at least 5 times louder.



c. Canopy Design Overview. Our examinations of occluding from direct line-of-sight for most worst-case aircraft fly-bys indicate that 2/3 canopy closure as a minimum is recommended here as well as some degree of closure protection from stray reflections off nearby buildings. That is, full closure across all the rear audience is also required, as well as some closure, we expect along perhaps ½ of the audience left side or conceivably a partial closure as a bit of "East Wing" attached to the proscenium wall at its NE corner inasmuch as audience there does see a bit of the approaching aircraft. We feel it may be prudent to include cost provision of an as yet undefined closure in that region, without being specific as to its actual construction. Further, any requirements that may arise to serve necessary heating/cooling/ventilation needs are not addressed here as it is rather unclear just what they might comprise. In any case, we have determined the following likely construction characteristic materials that could achieve (with the extent of coverage described here) to between about 16 and 22dB noise reduction from the current condition. While this range of level reduction is necessarily based on approximate calculations given the multiple and changing variables of aircraft type, specific altitude and location in the flight track width and patron's seat in the audience, it does presume a specific canopy extent, surface weight density (lb/sf) and some absorptive materials applied as necessary to exposed surfaces that could provide "back-door" noise intrusion via reflections. The calculations also presumed stagehouse retrofits to close large openings in east and south-facing walls as well as sound absorptive finishes on its interior surfaces as described below.

d. Partial Canopy Performance and Implications. Compared to today's noise levels in the fully-exposed amphitheater we summarize below our predictions of fly-by maximum levels within the seating and their associated Notes 1-4.

Approximate noise levels at audience seating for 2/3 and ½ Canopy coverage.

Without Canopy **With 2/3 Canopy as function of exposure to open sky**
at seats most covered (south) | at seats least covered (north)
80dBA / *NC(n/a)* [2] | **58dBA** / *NC55* [3] | **64dBA** / *NC60* [4]
(22dB reduction for ½ aud.) (16dB reduction for ½ audience)

Without Canopy **With 1/2 Canopy as function of exposure to open sky**
at seats most covered (south) | at seats marginally covered
80dBA / *NC(n/a)* [2] | **60dBA** / *NC55* [3] **67dBA** / *NC60* [4]
(20dB reduction for 1/3 aud.) (13dB reduction for 1/3 audience)
but **80dBA** / *NC(n/a)* [2] for fully exposed seats
(0dB reduction for 1/3 audience)

Notes: (recall daytime ambient≈48dBA at Starlight and≈47dBA evening at Ford):

1. All references in this report to partial canopy enclosures presume the closure begins at ground level along the south edge of the theater and springs upward to the north.
2. Aircraft noise level is quite uniform across theater although the "heard" direction of the noise changes markedly depending on position of aircraft and seat within audience. This in itself is somewhat distracting. At this level, raised voice is only marginally understood 1ft from the talker.
3. Noise level is lowest for these seats farthest from open sky. Apparent location "shifts" of noise source will be substantially reduced compared to without canopy. Normal voice level becomes marginally understood beyond 20ft.
4. Noise level is highest for these seats nearest open sky. As for those seats most covered, apparent location "shifts" of noise source will be substantially reduced compared to seats without a canopy yet probably more noticeable than for patrons most covered (deeper into the canopy). Normal Voice level becomes marginal beyond 4ft from the talker.

i. Audio Implications for Touring Groups: Roadshow performers (most large touring shows) have an understandable predilection to not entrust their reputation to any venue's unknown sound system, no matter how "dialed in" or appropriate it may be for that venue in the opinion of its owner/operators. Additionally, in the brief period they have to set up their own audio rigs, they rarely attend to all the vagaries of a specific venue's acoustical environment and requests to limit sound levels from bleeding into areas immediately outside the venue's seating. Thus, once the level of amplification that is normally expected for popular, amplified music (north of 105dBA average at the rear audience) is engaged, then a variety of concerns arise, including:
   a. Many such shows will require "riders" unfriendly to this locale and partially-covered venue. While their produced sound can handily overcome most jet noise impacts remaining with or without any canopy, sound levels bleeding beyond the theater are likely to disturb other park patrons and we would need to accommodate additional closure (probably full enclosure) to guard against such complaints.
   b. Residential neighbors across the freeway, including possibly San Diego City College may loom large in complaint court unless the venue were fully buttoned up.

ii. Audio Implications for non-Roadshow Groups. Providing any partial coverage-only canopy presumes a custom "house" sound system for the venue – which system would likely include provision to "ride" with the changing aircraft noise level to minimize its effects on show. Thus, our focus here has been largely on learning the implications of generating good, amplified sound within a rather unique, existing noise environment at least for the principle, historic uses of the venue – i.e. serving Musical Theater. Still, we feel the programmed uses can successfully stray materially from

Musical Theater as long as touring shows with highly restrictive riders and inflexibility with respect to level (dB) control to neighbors is recognized as unlikely or at least problematic. Please see our annotations on Wes Brustad's Proposed Programming. Performance types not annotated should be fine within the parameters of our design prescripts.

iii. General Membrane Construction. Apart from any necessary, protective, finish roofing material or membrane, the canopy is conceived now as comprised of relatively solid panels of 10lb/sf. Specific materials considered could be any combination of 1" precast concrete panels, 3/4" laminated glass, 1.5" wood-cement board (such as Viroc), or the like. Regions of the canopy south of the seating centerline would need to have full closure (i.e. sealed, or otherwise w/o openings in the solid material) while north of the centerline, its likely that there could be small openings, but no wider than about 1"-2".
General Membrane Underside. To control sound build-up that does not now occur given the openness to the sky, anticipate that 90% of the canopy underside is covered with 2" minimum thickness, encapsulated sound absorptive glass fiber, such as MBI's lapendary treatment (e.g. http://mbiproducts.com/products/lapendary/). Other solutions exist, of course, but this may serve sufficiently for costing. In the interest of controlling sound energy build-up irrespective of the sound source, consideration should be given to capitalizing on "found" surfaces to treat with absorption. Consider padded seating suitable for exterior use (e.g. http://www.irwinseating.com/facility-type/arena-stadium-seating/outdoor-fixed/) as well as outdoor carpeting in aisles, etc.

iv. Other Considerations – for Musical Theater (and the like).
    1. Beyond accommodating ventilation needs, there may arise opportunities in the canopy structure to accommodate interesting show-related lighting and audio effects provisions.
    2. The stagehouse itself requires acoustical enclosure/protection from aircraft noise impact as well as general control of its current reverberance and sound build-up. The former is provided by applying (for budgeting purposes at this time) STC45 doors at all openings, or otherwise plan for closure of those openings where possible with standard STC45 wall construction. At the roof, the smoke hatches should be replaced with STC45 hatches such as by Bilco. Reverberation control within the stagehouse can be achieved by direct-applying to both the stage left and stage right walls (including new, large stage right door(s)), to 24ft A.F.F., 4" thickness of 3pcf duct liner board (such as *Permacoat Linacoustic* R-300 by Manville) covered on the non-rigged wall with pre-painted (black) hardware cloth for protection. Similarly, the upstage walls should be treated with the same material up to 24ft A.F.F. Alternatively for treating the upstage wall area, one could hang two layers (separated by 2" minimum) of 32oz/yd Inherently Flame Retardant (IFR)

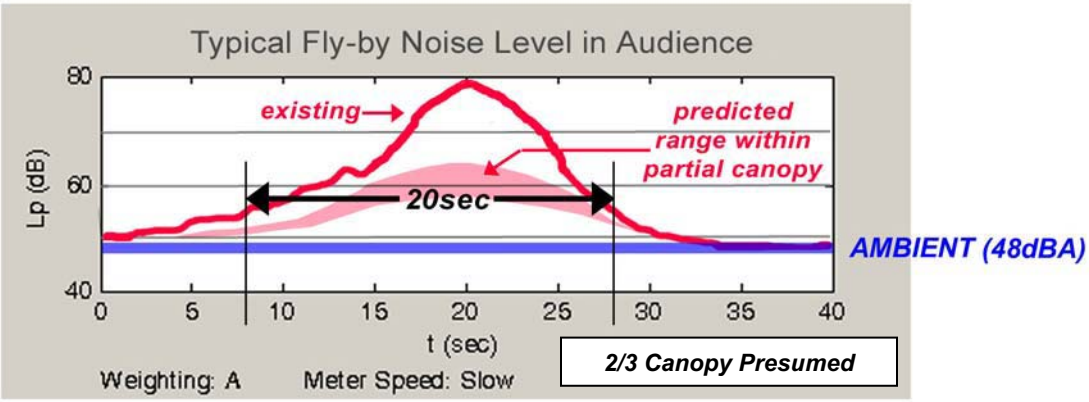
theatrical velour or a single layer of this material in 100% folds. Likewise, the upstage wall of the orchestra pit should be treated over 90% of its exposed surface with 2" thickness of glass fiber panels such as "Metro" by *Wall Technology*.

D. ADDITONAL BITS, SUMMARY AND PROSPECTIVE NEXT STEPS

Because this project has many, entangled components and considerations well-removed from issues of physical acoustics, politics, historical preservation, timing, and fund-raising it deserves serious examination of a broad spectrum of approaches to mitigating the long-standing fly-by distractions. Our in-house discussions thus included rather outside-the-box approaches. Among those raised and vetted were noise-cancellation ("anti-noise") with or without personal headsets, ambient noise compensation and the like. While we could entertain a noise-cancellation study, the only implementation that might have some traction would require personal headsets. Many millions of dollars have been invested by both the private sector and military to achieve such control in open environments w/o headsets - all to no avail. The number of microphones and loudspeakers required, to say nothing of the computation power to make a noticeable difference even for one patron in (only) one location is unfathomable. Personal headsets, apart from the cost and risk to damage (or outright loss) in principle, might have traction, but there also arise sound quality, and uniformity and loudness from on-stage loudspeakers as it is provided through the headsets of whatever stripe. It would be an intriguing application and we would be pleased to pursue it more deeply if requested; however, the clear visual distraction of the aircraft remains unaddressed. We have considered more seriously, "ambient noise compensation" – which is in regular use in airport terminals, shopping malls, some restaurants and automobiles and partly because it could "pair well" in this project with a custom-design house audio system. It does not relate specifically to the canopy design, but in principle, might provide an additional several dB of "lift" during fly-bys, to help maintain intelligibility of speech, singing, etc. We discuss this in context with other, audio-related aspects of a total solution.

1. <u>Distractions and Speech Intelligibility in the presence of Background Noise</u>. The tabular values indicated in C.2.c, above, indicate only speech intelligibility-related issues in the absence of amplified sound from the stage. Even in the absence of any canopy (and certainly this applies to any partial canopy), there is nothing that can materially over-ride what a proper audio reinforcement system can do to maintain audibility of the show, including good speech intelligibility. For example, our calculations show that under the current 80dBA jet noise spectrum with amplified speech as would normally be provided for a stand-up comic, we predict Very Good Speech Intelligibility (Articulation Index descriptor (AI)=0.16). Correspondingly, at the least-protected seats (north side) in the 2/3 partial canopy (jet noise contributions would be near 64dBA), if the audio-contributed level were to drop from Seinfeld levels by 10dB (say, a graduation ceremony) we get Excellent speech intelligibility (AI=0.89). It has thus been increasingly apparent that speech intelligibility if examined alone, is likely far less an issue than the curious distraction of slowing hearing background noise rise, then actually seeing the noisy beast loom large – and close. Of course, we've had no opportunity to attend performances of the Theater, but it would have been instructive to hear amplified events, measure those levels while noting audience reaction. Certainly, significant mitigation of much of the current impacts

is important (a reduction under the 2/3 canopy by 15-22dB is highly significant) but one can imagine that even if we reached 25dB or greater reduction, if the aircraft remained in full view of even 15% of the audience, most performers would surely stop anyway until they could regain the patrons' attention. Thus we feel that any tractable solution must block line-of-sight at least during the most noise-egregious portion (typically the middle 10 seconds) of fly-bys. If the reductions indicated herein were achieved, then the time-history of typical fly-by noise levels for audience would "live" within the red pochet in the chart below, thereby resting handily within a range acceptable for speech intelligibility, at least. Additionally, however, in order to



ensure that all key announcements, speeches, sung passages, etc. are not compromised at any time, it would be prudent to include within the house system an "ambient noise compensation" feature. This would continuously monitor noise levels from incoming aircraft say, just east of the stagehouse and could augment the amplified signal to loudspeakers, adjusting somewhat automatically, within preset limits, to provide a slowly rising (then falling) 3dB-5dB or so additional audio "lift" when felt necessary.

2. Full Canopy Roof. If the canopy were to fully enclose the audience – or to within about 90-95% of full closure (with any remaining openings only at upper audience left, and/or at audience rear - albeit with sound-absorptive "sound-lock" vestibules there) then it would be prudent to increase its surface weight density to 15-20psf as a minimum. The balance of the acoustical recommendations provided herein remain unchanged, with the exception that most, perhaps all exterior sound-absorptive treatments on the north side of the theater would likely be no longer required. In this case, while aircraft could still be detectable in quiet moments or passages during a program, the audio system would be fully adequate to make the incoming jet's presence little more than a detectable blip. It is likely in this case, that the prior-mentioned "ambient noise compensation" feature would not be required. Further, with the likelihood of a rather uniform "room acoustic" for all audience (i.e. not asymmetric), there becomes less for a house sound system to be designed in a very "custom" way to accommodate the asymmetry. Next, of course, could loom large the question of bringing in louder, touring acts that would wish to mount all their own audio system and would require no "owner" influence over their audio levels either inside or outside the venue. Should the prospect of accommodating such a development arise, then the specifics of the wall/roof construction as well as HVAC design implications (as they relate to prospective noise leaks both into and out of the enclosed venue)

loom large as a significant design exercise. One could reasonably presume in such a case, that the roof construction alone should be designed for Sound Transmission Class 50+ with especial care to actual construction detailing to ensure low frequency (bass) energy does not become excessive either elsewhere in the park (e.g. by the museums) or across the freeways to the southwest and west.

3. Next Steps. If the project would proceed with an approach as described herein, we would be pleased to continue digging more deeply into aspects that the stakeholders feel is prudent. To that end, it is instructive to know we could model, in an "auralization" sense, the nature of the sounds and sound levels as heard within the theater under various scenarios. For example, under carefully-controlled conditions and equipment, either via headphones or appropriate loudspeakers, we could in principle, simulate today's ambient noise environment, then punctuate by a typical landing, then repeat with representative audio material (as typically amplified from the stagehouse). We could then repeat, seated deep inside the canopy and again nearer the open canopy's open edge. Additionally, once we felt we had a sufficient handle on providing optimally spectrum-shaped and timed "ambient noise compensation" we could repeat all the above to test the degree of "lift" that would be minimally objectionable. Such auralizations, in order to be valid, require an unusually high degree of control over both their preparation and presentation. Even at that, they should be viewed as approximation models, generally more useful for comparisons than accurate representations of a final condition. In any case, of course, they are necessarily devoid of the visual impact/distraction that seems to be as large a component as any acoustical impact on shows.

This completes our Report. Please feel free to call with any questions after your considered review!

Sincerely yours,

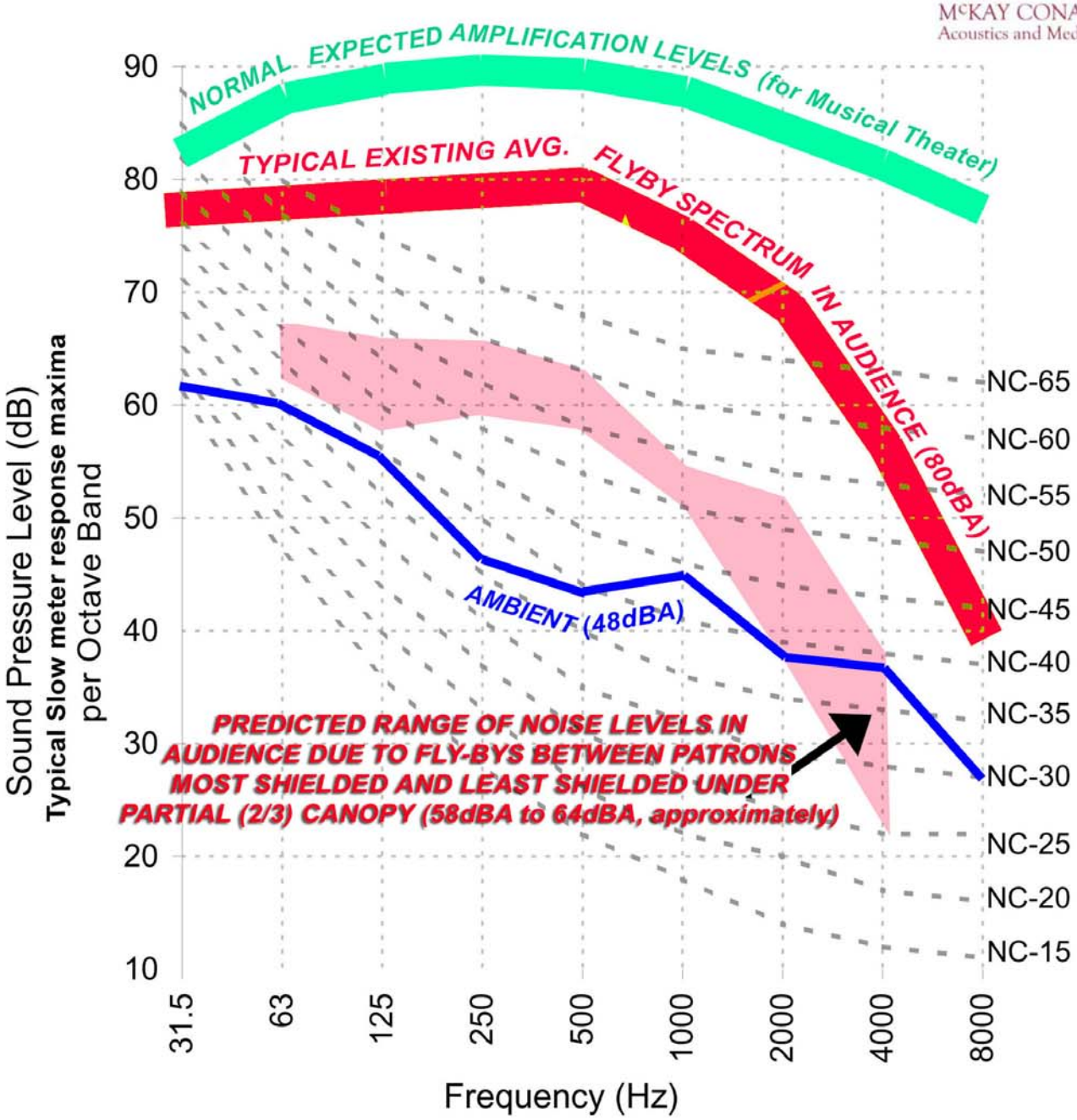
McKAY CONANT HOOVER INC

David A. Conant, FASA
Principal

cc: Randy Willis/ MCH
Encl: Figure 1 and Appendix

Starlight Theater, Balboa Park, San Diego, CA

MCH
McKAY CONANT HOOVER INC
Acoustics and Media Systems Consultants



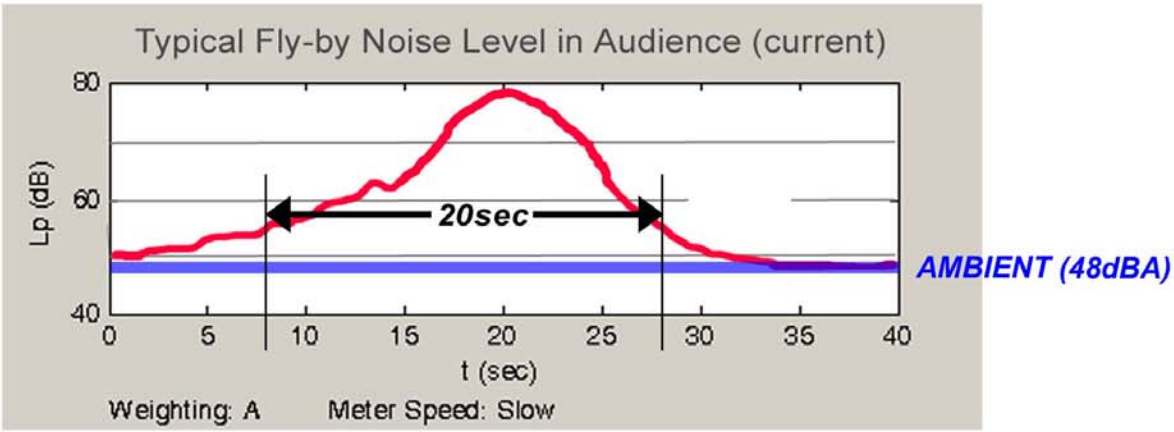
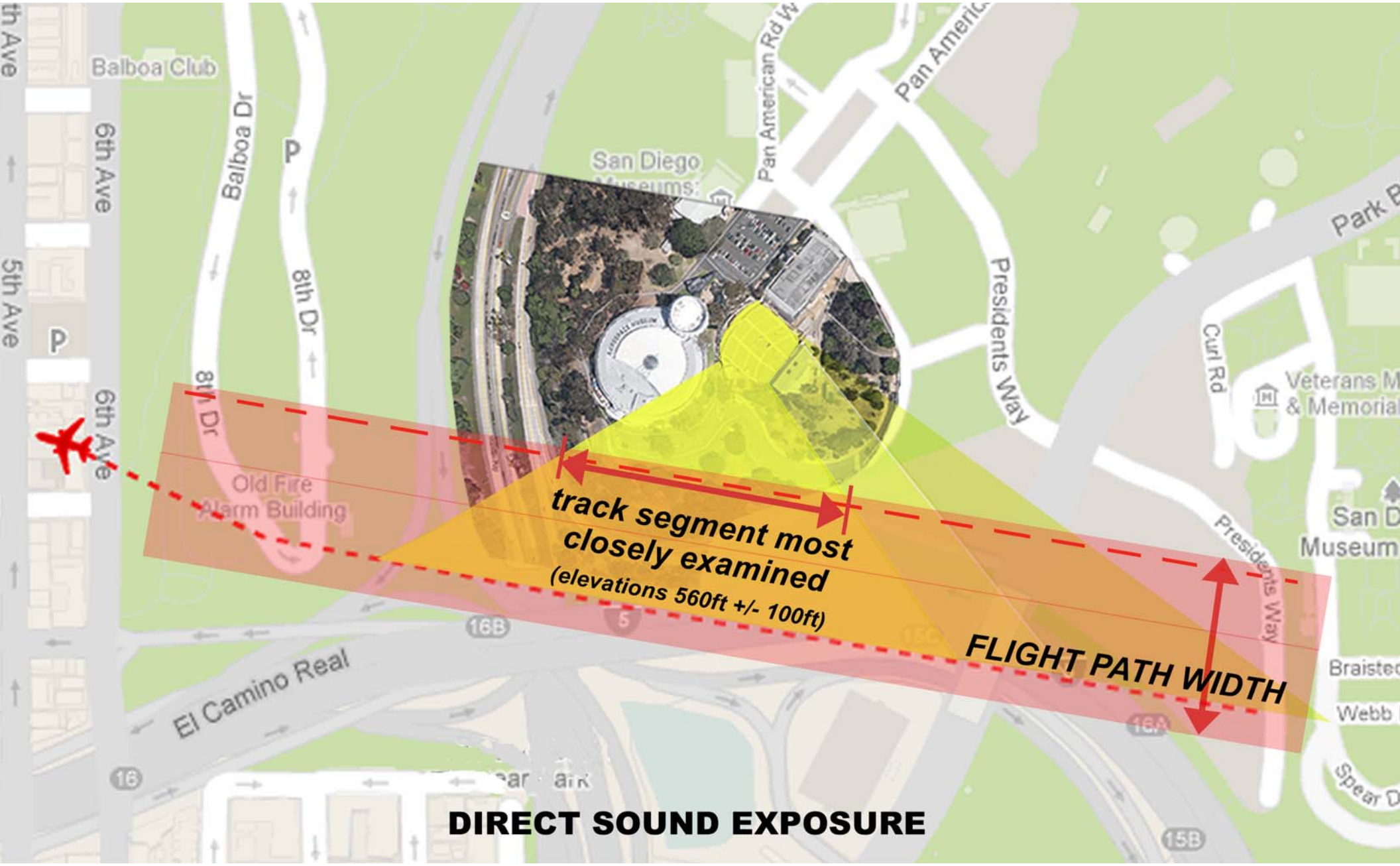
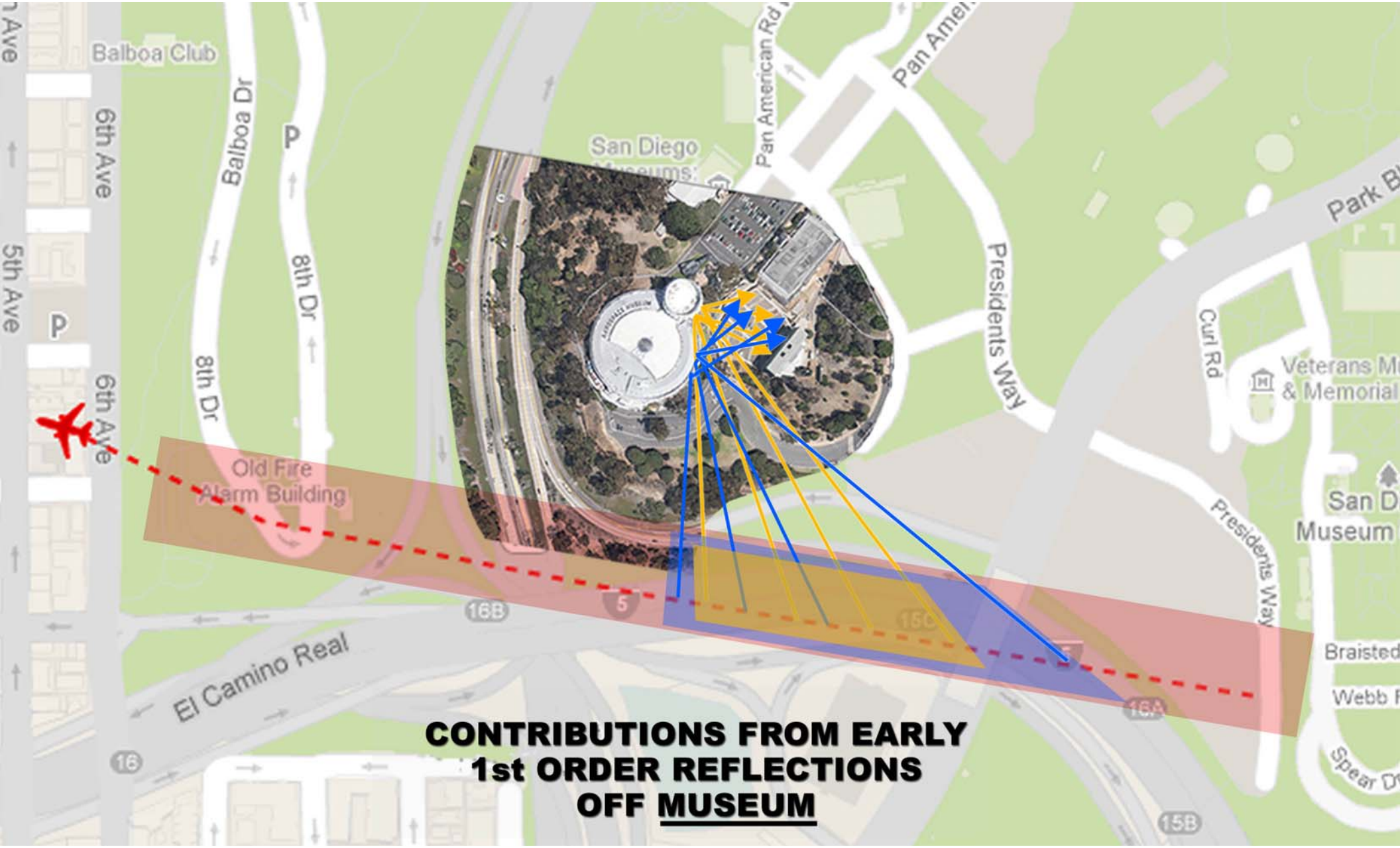


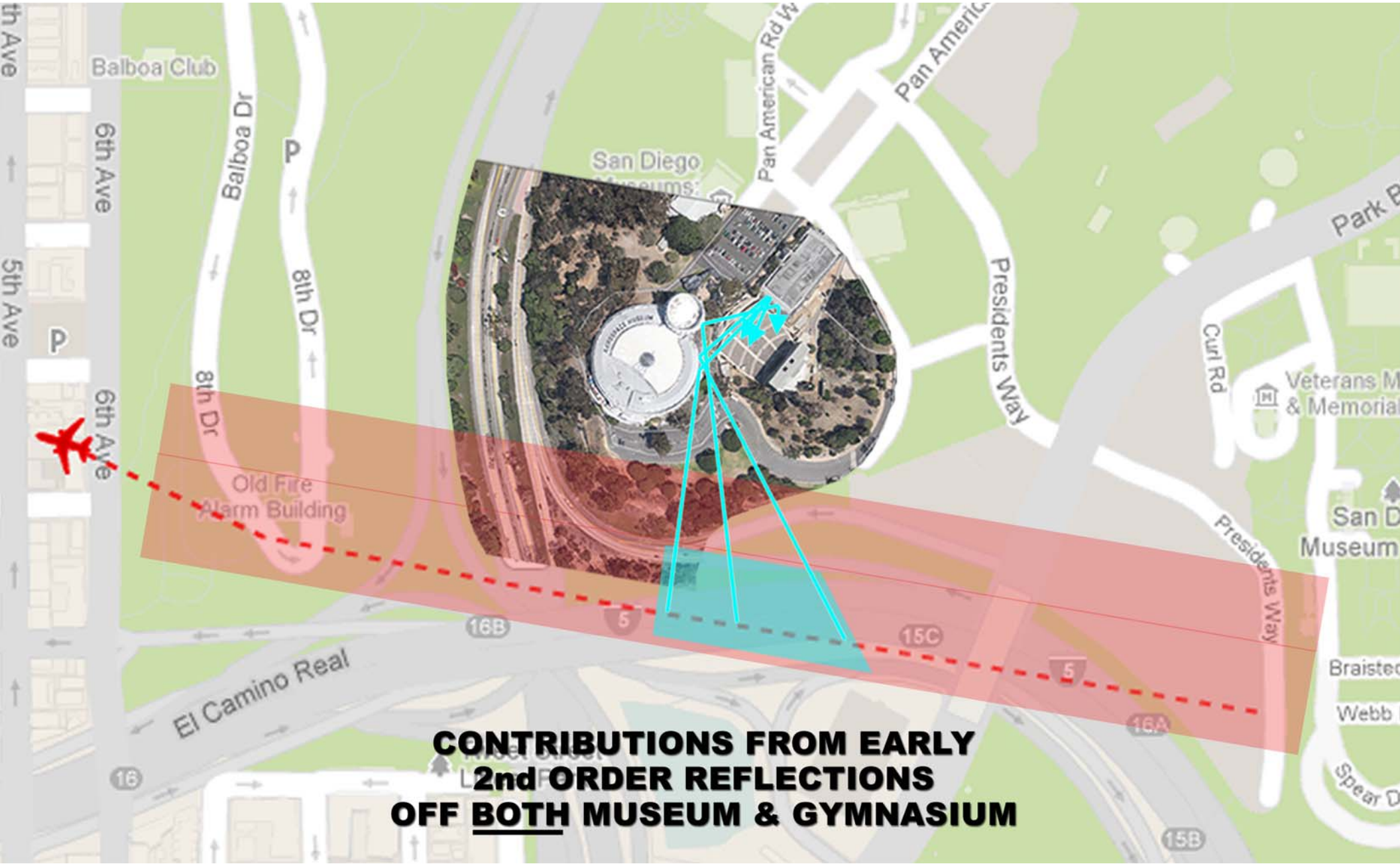
FIGURE 1



DIRECT SOUND EXPOSURE



CONTRIBUTIONS FROM EARLY
1st ORDER REFLECTIONS
OFF MUSEUM


Balboa Club
6th Ave
5th Ave
Balboa Dr
8th Dr
San Diego
Pan American Rd W
Presidents Way
Curl Rd
Park B
Veterans M
& Memorial
San D
Museum
Old Fire
Alarm Building
El Camino Real
16B
15C
16A
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CONTRIBUTIONS FROM EARLY
2nd ORDER REFLECTIONS
OFF BOTH MUSEUM & GYMNASIUM

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BACKGROUND NOISE CRITERIA FOR VARIOUS INDOOR USES

NC Range*	Communication Environment	Typical Application
NC-15 to NC-20	"Nearly Inaudible" - Suitable for voice communication at large distances; critical listening and recording.	Concert Halls, opera houses, drama theaters, broadcasting and recording studios, recital halls, large auditoriums, large churches, critical testing environments.
NC-20 to NC-25	"Very Quiet" - Suitable for large conferences; normal voice at 30 to 60 feet; careful listening and recording.	Television studios, teleconference rooms, audiovisual facilities, lecture rooms with distance learning, music teaching studios, drama rehearsal rooms, small auditoriums, small churches, chapels.
NC-25 to NC-30	"Quiet" - Suitable for normal voice at 20 to 40 feet; close microphone recording only.	Classrooms, lecture rooms without distance learning, conference rooms, meeting rooms, banquet rooms, movie theaters, music practice rooms, executive offices, medical exam rooms, interview rooms, courtrooms, residences, hotel suites.
NC-30 to NC-35	"Moderately Quiet" - Satisfactory for conferences at 15 foot table; normal voice 10 to 30 feet.	Private or semiprivate offices, reception areas, libraries, apartments, standard hotel rooms, motel rooms, hospital wards, banks, museums, quality dining rooms, auditoriums in excess of 4000 seats.
NC-35 to NC-40	"Moderately Noisy" - Satisfactory for conferences at 6 to 8 foot table; normal voice 6 to 12 feet; acceptable for dictation recording.	Lobbies, corridors, general secretarial areas, open plan offices, retail shops and stores, cafeterias, restaurants, bars/lounges, nightclubs, gymnasiums, arenas and coliseums, laboratory lecturing spaces.
NC-40 to NC-45	"Noisy" - Satisfactory for conferences at 4 to 5 foot table; phone use slightly difficult; normal voice 3 to 5 feet and raised voice 5 to 10 feet.	Commercial kitchens, laboratory work spaces, drafting and engineering rooms, maintenance shops, toilet rooms.
NC-45 to NC-50	"Quite Noisy" - Satisfactory for conferences of 2 to 3 people; telephone use fairly difficult; normal voice 2 to 4 feet and raised voice 4 to 8 feet.	Laundry rooms, school and industrial shops, photocopy rooms, computer equipment rooms.
NC-50 to NC-55	"Very Noisy" – Unsatisfactory for conferences; telephone use difficult; normal voice 1 to 3 feet and raised voice 3 to 6 feet.	Machine accounting and data processing areas, office equipment rooms, general storage, parking garages.
Above NC-55	"Unacceptable" - Office environment unsatisfactory.	Not recommended for occupied spaces other than industrial.

* Refers to NC (Noise Criteria) Curves (1957) for steady state noise from Noise and Vibration Control by Beranek, ed., 1971 McGraw Hill Company, N.Y.

NOISE LEVEL COMPARISONS (dBA)

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 1000 ft	110	Rock Band
	100	
Gas Lawn Mower at 3 ft		
	90	Food Blender at 3 ft
Diesel Truck at 50 ft at 50 mph	80	Garbage Disposal at 3 ft
Noisy Urban Area, Daytime		Vacuum Cleaner at 10 ft
Gas Lawn Mower at 100 ft	70	Normal Speech at 3 ft
Commercial Area		
Heavy Traffic at 300 ft	60	Large Business Office
Quiet Urban, Daytime	50	Dishwasher Next Room
Quiet Urban, Nighttime	40	Very Large Theaters / Arenas
Quiet Suburban, Nighttime		Large Conference Room (Background)
	30	Library
Quiet Rural, Nighttime		Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

1dB CHANGE: ***SLIGHTLY NOTICEABLE UNDER LABORATORY CONDITIONS***
3dB CHANGE: ***SOMEWHAT NOTICEABLE IN FIELD CONDITIONS***
10dB CHANGE: ***ROUGHLY CORRESPONDS TO DOUBLING - or HALVING OF SUBJECTIVE "LOUDNESS"***

STARLIGHT BOWL AMPHITHEATRE
PROPOSED PROGRAMMING PARAMETERS

Theatre

? Broadway musicals (locally produced and touring)
? Large, touring children's shows
Theatre performances (in stage house)
High School and College theatre festivals/competitions
Comedians
Revues
Theatre spectacles (e.g., large scale Shakespeare)
Historical dramas
Theatrical pageants
Variety shows (e.g., Chinese Acrobats, pole walkers)
Poetry slams

Dance

Dance performances (large scale)
Dance festivals/competitions
Ethnic dance spectacles
Dance school recitals

Music

X Rock and pop concerts
Contemporary Christian concerts
Band and symphonic concerts
Music festivals (e.g., blues, folk, bluegrass, pop, jazz)
? Music competitions
Military band and marching unit performances (e.g., Blackwatch Guards)

Film

Film screenings
? Film festivals/competitions (animation, Comic-con, retrospectives)
X Film/TV shoots (advertising shoots, feature productions, television productions)

Special Events

Graduation ceremonies
Patriotic/community celebrations and memorials
Awards shows
Special events (e.g., fundraising performances for community charities)
Large community convocations
Church services, memorials, meetings
Conferences
X Television spectacles
Sporting events/competitions (boxing, gymnastics, wrestling, Extreme sports)
Beauty pageants
Ethnic festivals (e.g., Chinese New Year's, Divali Festival)

? = Potential concern over enforcing park-appropriate audio level control as well as level-playing-field issues associated with competitions where sound is of PRIME importance.

X = Likely poor choices to offer either because of surely prohibitive "riders" associated with required sound levels at all audience seats or special sensitivity to jet noise creep into microphones, even if close-miked, during quiet or speech. Note that some groups such as "Tribute" bands, regularly perform using "house" sound systems.

SECTION X – THEATER ASSESSMENT

Prepared by Landry Bogan, Inc.

Planning • Architecture • Performance Lighting • Stage Rigging • Orchestra Enclosures • Lifts • Machinery

LANDRY & BOGAN
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KENT CONRAD ASTC

PAUL LANDRY (1922-2004)

Carmen Pauli
Heritage Architecture
625 Broadway, Suite 800
San Diego, CA 92101

March 21, 2013

Subject: Starlight Bowl site visit J-681

Carmen:

As you know, Kent Conrad and I toured the Starlight Bowl on Monday March 11, to review the existing conditions and provide a report on what needs to be done to reopen it for the broad range of performances proposed by Wes Brustad.

The attached preliminary report represents our findings/recommendation and some conceptual budget ideas.

Sincerely,

Rose Steele, Principal Consultant
Landry & Bogan, Inc.

Starlight Bowl Functional Condition Assessment

The Starlight Bowl provided many years of entertainment San Diego audiences, even though the increasing traffic from the airport eventually forced performers to freeze the show whenever a plane roared over. Unfortunately a perfect storm of deteriorating conditions and the nationwide economic struggles, as well as competition for the public's attention from digital offerings and devices forced the performances to stop after the 2010 season.

This assessment is part of a larger effort to determine what must be done to restore the facility to appropriate operating condition and what can be done to mitigate airplane noise. This part of the study is limited to what is required for theatrical function; the noise abatement effort will be provided by McKay, Conant, Hoover Inc.

Overall the theatre is not in terrible condition; some parts are badly in need of attention but the mild climate has kept deterioration to a minimum. Changing building codes, equipment standards and audience expectations will require more modification to make the Bowl attractive to users and patrons.

We strongly recommend a programming session with the City, Mr. Brustad and representatives from the Civic Light Opera and other stakeholders to more clearly define and prioritize the events the Bowl must serve in order to focus available resources in the most appropriate way.

Here are our findings and recommendations for audience, performer and technical upgrades required to bring the Starlight Bowl up to expected standards for the broad range of anticipated activities.

Audience Spaces:

The airplane noise issue is the foremost problem to be addressed and is being studied by McKay Conant Hoover who will report separately. The audience seating and amenities are also greatly in need of improvement. The seating area is too wide for good sightlines from the sides, the seats are old and uncomfortable (according to social media comments) the steps are irregular and there is insufficient egress lighting. Also, the ADA access is insufficient, it's too far from seating to concessions and restrooms and the restrooms are inadequate.

We recommend that the team work together to re-imagine and re-design the audience space, incorporating the acoustic solution into a new audience plan that integrates services into an audience layout that is safe, comfortable, code-compliant and provides good sightlines and hearing from the stage.

A redesigned audience bowl could be very different from the existing; for instance, the Owner has requested "box seating" to provide a higher level of service to some seats. Prior to the 1997 stage addition, these seats were in the front. One very preliminary idea is to create side boxes which integrate sound walls, premium seating, and accessible routes to expanded toilet and concession spaces – this is a radical change from the existing and will require some immediate design effort to

determine if this is feasible and desirable, but we propose it as an example of the significant changes that can and should be considered.

Another concept to consider is lawn seating, as proposed by Wes Brustad; perhaps an area at the back of the bowl could be demolished and re-imagined as a lawn/green roof concept, with theatrical equipment control and a service concourse underneath a green roof, providing a lower level of circulation that could also serve as part of the handicapped-accessible route to seats in places other than the back of the bowl.

These and other ideas should be explored to insure that the renovated Starlight Bowl rewards audiences with a facility that is a joy to attend for all.

If changes must be limited, the concrete must be re-worked to provide aisle/egress lighting and safe and code-compliant steps, the seats should be replaced and re-spaced to provide the best possible sightlines and to eliminate seats whose sightlines are so poor as to be unsalvageable.

Seats – providing new seats will greatly enhance the audience experience, and several manufacturers have outdoor seating with padding on seat and back, which may assist in sound absorption as part of the acoustic adjustments also.

Any new seating arrangement will likely result in fewer seats, which we understand to be acceptable to the Owner. How many fewer will be a result of many decisions yet to be made, such as box or lawn seating as described above. It is possible that the reduction in seat count could be several hundred seats. We recommend the Owner consider how many or how few seats they must have before we begin redesigning the seating area.

ADA access - current requirements call for 6 wheelchair spaces plus 1 for each 150 or fraction thereof between 501-5000 seats, which will mean creating 18 to 23 wheelchair spaces and companion seats. If there are multiple levels and multiple prices there are detailed requirements for the distribution of required wheelchair spaces between the levels and the wheelchair spaces cannot all be in one place. In addition, the California code requires 5% of all aisle seats to have fold-away or no arms or end standards and 1% of all seats to have 24" clear in front for semi-ambulant individuals. That is a lot of seats that require special consideration and this will affect the seats and circulation around them. No seating concept is complete until these requirements have been included.

ADA access paths are also required from the seating to the stage and backstage areas, and of course, to restrooms and exits. Dressing rooms and control rooms require ADA access as well. The current arrangement does not comply.

Concessions – currently two home-built platforms supply concessions within the Bowl. These are unsightly and inadequate. Any redesign will need to address this issue as audiences expect good access to food and drink in summer outdoor venues and it's often an important revenue stream as well.

Box office and administrative space: Event ticketing is done online more and more and this trend is expected to accelerate, but since last-minute event attendance is also increasing, there is still a need

for face-to-face interaction at the time of performance, and control is required at entrances to insure that all patrons have purchased tickets.

How ticketing will happen and who will control it (SDCLO, Park-wide box office, Ticketmaster?) will also affect the arrangement of spaces and security required. These elements need to be planned and integrated into any new entry design.

Stage

A big concern for the stage is weather protection; neither the loading door stage right nor the proscenium has any method of closing to protect the stage from the elements. This is critical for any and all future uses. The loading access can be protected by a rolling door, or a pair of rolling doors back-to-back for maximum acoustic effect. The proscenium opening requires special attention, as it could be interpreted to require a fire curtain. If so, it is possible that the fire curtain could supply sufficient protection from San Diego's mild climate, but design and installation of a curtain meeting the code could be very difficult, given the existing columns at the proscenium. A curtain of that size would need to be motorized. If a fire curtain is not required, a large door as manufactured by Megadoor or other industrial door company can be installed. Any closure may be difficult to install given the large columns just upstage each edge of the proscenium opening.

Depending on the event programming, it may be possible to simply seal the loading and stage opening with heavy-duty plastic for the winter months.

The original Starlight stage was a band shell, which still exists behind the new stage house but is minimally useful for scenery as the ceiling height is too low. The stage house is quite shallow at 28' but with reasonable wing space. A more typical stage size for major musical comedy is 40' or more deep with up to 60 linesets. There are 25 manually-operated counterweighted linesets for vertical movement of scenery operated from a locking rail stage left at stage level. The system appears in reasonably good condition, but requires a thorough inspection by a qualified firm (and replacement of badly stretched hemp handlines) before operation or replacement. There is a walking grid over the stage accessed by a caged straight ladder near the locking rail. The location of the ladder is less than ideal as it condemns a lot of wing space stage left. We were not able to access the grid area during our walk-through as it is locked off.

The stage surface is covered by badly warped homesote; a new surface is required. We recommend a sprung floor construction - resilient pads on sleepers with plywood underlayment. There are several choices for the top surface and it should be chosen after a discussion with the Owner as the choice will be dependent on what level of weather protection will be needed.

Orchestra pit and passerelle –

The orchestra pit was apparently created during the 1990's stage expansion and a user-built passerelle (runway around the audience edge of the pit) was added later. The bottom of the pit is much too deep for a pit band playing level, but it appears that was the only way to get access to it through the existing lower level, though we are told that there was once a wheelchair lift from house right down to the pit. Flooding has been a problem at some point as there are sandbags in the pit and a puddle of water in the understage area immediately adjacent to it.

The pit needs handicapped access and some way to rise to proper playing level, whether it's completely rebuilt at the appropriate level, equipped with one or more pit lifts (which can't be used as part of the handicapped-accessible route) or with custom platforms from a theatrical pit platform manufacturer.

The design team needs to work with the users to determine the appropriate configuration and number of pit lift pieces and appropriate construction for the passerelle. A sump pump in a pit will be required to protect the mechanisms from flooding during rainy weather.

Back-stage and under-stage areas -

There is a lot of useable square footage surrounding the theatre, and a rabbit warren of storage, costume maintenance, and performer support spaces have been created behind and below the stage. The design team should work with the Owner's representatives to determine the needs of local and touring productions and rework this area into appropriate spaces and circulation. Some air handling and humidity control may be needed, especially if costumes or props will be stored long-term.

Currently there are many costumes in the theatre, including dozens of sets of men's black and white formalwear. These suits and tuxes appear to be salvageable with a simple cleaning and represent thousands of dollars of useable costumes which should be removed, cleaned and properly stored for appropriate disposition before any construction starts. In addition there is costume construction and maintenance equipment which should also be salvaged before construction.

Load-in: The path to the theatre stage is down a steep grade stage right but there are two docks; one at stage height and one at grade, and there's space to turn around a modest-sized truck. This may not be sufficient for the touring productions anticipated and grading, additional paving and supplementary access may be required. There is a vestigial roadway behind the stage which might be reworked to add an elevator for backstage personnel and perhaps a few parking spots for staff.

While walking around the backstage and upstage areas we noted a number of places with the original shell stucco is missing and the metal mesh is exposed; these areas should be reviewed to insure that they do not represent any serious loss of integrity of the building or provide places for water or critters to invade.

Theatrical Systems:

Performance lighting - The lighting system(s) are obsolete and should be completely replaced. Again the Owner needs to work with the design team to determine how much of a house system is needed and how much will be brought in by outside users or rented on a seasonal basis. At the very least, several 400A company switches will be needed for lighting, one or two 100A or 200A switches for sound and motors. Rehearsal, work lighting and house lighting will also be required with parallel controls distributed on stage, backstage and in the front-of-house as needed.

One very big design issue for every use is how to create safe and effective front-of-house lighting. The existing truss over the forestage is inadequate and not in an appropriate position. We hope to work with the acoustical cover/canopy, whatever form it takes, to create one or two front-of-house lighting positions which can be accessed safely, whether they are catwalk positions or motorized trusses. Catwalks are greatly preferable and may also be used for followspot positions, which are very important in musical comedy and popular music events. Side lighting to the forestage is also an important characteristic of good performance lighting (positions referred to as "box booms") and there is no provision for such lighting now.

Rigging - As discussed above, the rigging system needs a thorough inspection but much of it may be salvageable. The team should work with the Owner to determine the need for motorized sets, for tab sets (pipes that run upstage/downstage, usually for masking) and for rigging of any kind in the original shell. The stage depth of 28' contains only 25 existing linesets. This is not very many for a full fledged musical; if the rigging system is re-done the lineset spacing could be re-worked to increase the number of sets.

Stage lifts - There are firms that create outdoor lifts; some are theatrical equipment companies with that capability and some are elevator companies which can adapt industrial lifts. If a lift or lifts are not installed for budgetary or other reasons, alternate ways of covering or using the pit when not occupied by a band could be considered.

Theatrical controls: An in-house mix position for sound equipment with troughs to major equipment locations will be required; the existing position requires analysis for adequacy and appropriate location. It is completely exposed to the audience and to the elements. A house mix must be integrated into the redesign of the seating area so it will not be too distracting to nearby patrons. This position must also be handicapped-accessible.

Stage lighting can be operated from a similar position, on the second floor of the concessions building or a new location if the entry plaza is redesigned. Control positions must be handicap accessible. The advantage of such a room is that equipment can be left in place and locked up. Sound equipment moves/changes from event to event (lighting control equipment does sometimes as well but not as often) and the operators must have their "ears in the room", hearing what the audience hears, in order to properly mix sound.

Costs:

While major construction estimating is outside our purview, we offer the follow conceptual costs for items with which we have some experience.

Theatrical systems -

- Stage lighting: If a full system is installed including company switches the budget should be a minimum of $500K, more or less depending on the extent of the fixture package. The Owner/users need to determine whether the Bowl will have a full complement of lighting fixtures and accessories or if inventory will be rented, or what combination of both makes sense. This is a conceptual allowance for performance lighting, fixtures and control only; wire and conduit must be estimated separately by a qualified electrical engineer.
- Rigging: Inspection $2500. Complete replacement of 25 manually-operated linesets $350,000 (We suspect that much of the existing rigging can be serviced and re-used.) Servicing existing system could be as little as $25,000 or up to $250K or more if additional linesets are installed.
- 25 Motorized linesets and control $700-$800K (This would be instead of the rigging refurbishment above, not in addition to it.)
- Drapes, curtains, tracks, theatrical fabrics (cycs, scrims, etc) Allowance of $100K
- Motorized fire curtain (if required) $100-150K
- Stage lifts: 6 pieces; three for orchestra pit playing area and passerelle in 3 corresponding pieces: $700K Fewer pieces will reduce cost
- Stage floor: $18/SF]
- Seats: Good (plastic) $150-190/each, Better, (some padding) $200-225 each, Best (outdoor chairs as comfortable and fully padded as indoor seating) $400 each
- Other required equipment could include personnel lifts, orchestra pit furniture, choir/band risers and orchestra shell, production equipment to construct scenery. This needs to be developed during programming if included in the renovation project budget.

Summary:

The Starlight Bowl has been a San Diego institution for many years, but the days of "freezing" to allow airplane noise to dissipate are past, and that airplane noise must be mitigated if performances at the Bowl are to resume and be successful. We hope that any acoustical solution can retain some of the outdoor experience that makes the Bowl attractive to audiences.

Beyond the acoustical problem there is much additional work needed to create a Starlight Bowl that will meet the users' stated needs and program. This assessment assumes a fully-redesigned and re-built Bowl that will serve the Civic Light Opera and the people of San Diego for many years to come. This report is only an overview of the performance needs and we recommend detailed work with the Owner and users before the scope of the renovation is finalized. There are many variables to be determined and decisions to be made must as part of detailed programming with all the stakeholders.

We see the following areas as critical

- Appropriate acoustical solution that mitigates airplane and other exterior noise will still providing the outdoor experience.
- Re-shaping seating for comfort, safety and code-compliance (including restrooms and concessions)
- Providing safe and effective front-of-house lighting
- Providing an orchestra pit that is also safe, effective, compliant and weather tight.

End of Landry & Bogan report

SECTION XI – OPINION OF PRABABLE CONSTRUCTION COSTS

Prepared by Leverton & Associates LLC

CONCEPTUAL SUBMITTAL
OPINION OF PROBABLE CONSTRUCTION COST
L&A NO. 13-822-1

STARLIGHT BOWL
CONDITIONS ASSESSMENT & FEASIBILITY STUDY
SAN DIEGO, CALIFORNIA

APRIL 25, 2013

Prepared for: Heritage Architecture & Planning
Prepared by: Leverton & Associates LLC
(619) 258-1675

LEVERTON & ASSOCIATES LLC

ITEMIZED FORMAT OPINION OF PROBABLE CONSTRUCTION COST

PROJECT:	**Starlight Bowl**		FILE NO:	822-1
LOCATION:	**San Diego, CA**		DATE:	04/25/13
STATUS:	**Conceptual**			
DESC:	**Conditions Assessment & Feasibility Study**			
ITEM NO.		IMMEDIATE BEFORE 2015	LONG-TERM AFTER 2015	**TOTAL**
A	GENERAL RECOMMENDATIONS	245,875	-	245,875
B	SITE	239,000	480,000	719,000
C	BOX OFFICE & CONCESSIONS BUILDING	51,400	367,000	418,400
D	SEATING AREA	518,550	-	518,550
E	SHELL	31,400	-	31,400
F	FLY LOFT	237,800	-	237,800
G	STAGE	133,225	-	133,225
H	BACKSTAGE	87,300	-	87,300
I	WINDOWS	15,350	-	15,350
J	SOUTH RESTROOM BUILDING	131,480	-	131,480
K	NORTH RESTROOM BUILDING	71,700	-	71,700
L	STRUCTURAL IMPROVEMENTS	37,000	-	37,000
M	MECHANICAL IMPROVEMENTS	253,200	-	253,200
N	PLUMBING IMPROVEMENTS	231,500	-	231,500
O	ELECTRICAL IMPROVEMENTS	505,000	-	505,000
P	ACOUSTICAL IMPROVEMENTS	756,040	4,080,000	4,836,040
Q	THEATER IMPROVEMENTS	2,057,000	-	2,057,000
	SUB-TOTAL ESTIMATED COST	5,602,820	4,927,000	10,529,820
	CUMULATIVE MARK-UP (see below)	2,281,468	2,006,274	4,287,743
	ESCALATION (After 2015, 3-5 Years) 16%	-	1,109,324	1,109,324
	TOTAL ESTIMATED COST	**7,884,288**	**8,042,598**	**15,926,887**

Inclusions:

General Conditions (10%), General Contractor's Overhead & Profit (8%), Bonds & Insurances(3%), Contingency (15%), **Total cumulative mark-up 40.72%**

Escalation: After 2015, 3-5 years (16%)

Exclusions:

Architectural & engineering fees, permits & fees, testing & inspections

Hazardous material abatement work

Notes:

Cost Opinion is based on competitive bid situations, with a minimum of 5 (five) General Contractor bids and 3 (three) sub-contractor bids per trade as appropriate for each item. Labor rates are based on a Prevailing Wage contract.

This Opinion of Cost is provided for general budgetary guidance. Costs are based on historical cost data derived from similar projects, produced from written or drawn information provided during design stages of a project. Since we have no control over: the cost of labor, materials or equipment; or over the contractor's method of determining his prices; or over competitive bidding or market conditions, we do not guarantee the accuracy of such opinions as compared to contractor bids.

LEVERTON & ASSOCIATES LLC

ITEMIZED FORMAT

OPINION OF PROBABLE CONSTRUCTION COST

FILE NO: 822-1

DATE: 04/25/13

ITEM NO.	DESCRIPTION	EST. QTY	UNIT	UNIT COST	TOTAL COST
	IMMEDIATE IMPROVEMENTS (To Be Completed Prior to 2015)				
A	**GENERAL RECOMMENDATIONS**				
1	Perform comprehensive haz-mat survey	1	ALW	8,500.00	8,500
2	Re-key all new & existing doors	1	ALW	2,500.00	2,500
3	Perform termite inspection & treatment	1	ALW	10,000.00	10,000
4	Repaint exterior & interior of all buildings	1	LS	45,000.00	45,000
5	Replace roofing at all buildings	6,500	SF	10.00	65,000
6	Fire sprinklers at box office & concessions bldg	1,800	SF	10.00	18,000
7	Upgrade/replace exstg fire alarm system	15,500	SF	3.75	58,125
8	Upgrade/replace exstg security system	15,500	SF	2.50	38,750
					-
	Total - General Recommendations				245,875
B	**SITE**				
1	Remove exstg deck on south side of stage,				-
	construct new deck with overhead shade struct	1	LS	22,500.00	22,500
2	Access road improvements & truck loading area				-
	on north side of stage, grading & repaving	8,000	SF	25.00	200,000
3	Re-stripe exstg parking & signage for new				-
	accessible parking on south side of bowl	1	LS	2,500.00	2,500
4	Repair & resecure perimeter fencing	700	LF	20.00	14,000
					-
	Total - Site				239,000
C	**BOX OFFICE & CONCESSIONS BUILDING**				
1	Replace exterior doors	4	EA	1,600.00	6,400
2	Façade improvements & new signage at entry	3,000	SF	15.00	45,000
					-
	Total - Box Office & Concessions Building				51,400
D	**SEATING AREA**				
1	Elevator at south side of audience area including				-
	elevated wlkwy from pkg on south side of bowl	1	LS	275,000.00	275,000
2	Provide additional wheelchair seating spaces	1	LS	7,500.00	7,500
3	Reconfigure/expand box seats to remove fixed				-
	seats & provide flexible seating area	4,550	SF	15.00	68,250
4	Remove fixed seat conc paving area at top section				-
	of bowl & provide terraced lawn seating area	5,600	SF	20.00	112,000
5	Replace all remaining fixed seats - remove only	2,640	EA	7.50	19,800
	See Theater Improvements for new seats				-
6	Repair damaged conc paving with epoxy injection,				-
	replace severely damaged concrete				See Structural

LEVERTON & ASSOCIATES LLC

ITEMIZED FORMAT

OPINION OF PROBABLE CONSTRUCTION COST

				FILE NO:	822-1
				DATE:	04/25/13

ITEM NO.	DESCRIPTION	EST. QTY	UNIT	UNIT COST	TOTAL COST
7	Replace all aisle lighting				See Electrical
8	Replace intermediate steps in the aisles	240	EA	150.00	36,000
					-
	Total - Seating Area				518,550
E	**SHELL**				
1	Replace backstage ext exit doors				-
	Double doors	3	EA	4,000.00	12,000
	Single doors	2	EA	2,000.00	4,000
2	Replace missing wood platform & stairs at				-
	backstage exit doors on north side	2	EA	7,500.00	15,000
3	Replace damaged plaster & lath at south corner	16	SF	25.00	400
					-
	Total - Shell				31,400
F	**FLY LOFT**				
1	Install roll-up doors in large opening on north side				See Acoustical
2	Cover exstg corrugated metal cladding with				-
	plaster cladding	13,520	SF	15.00	202,800
3	Steel sliding doors at stage opening, 52' x 25' hi	1	EA	35,000.00	35,000
					-
	Total - Fly Loft				237,800
G	**STAGE**				
1	Replace stage flooring & underlayment:				-
	Stage flooring with sprung construction	3,091	SF	20.00	61,820
	Stage flooring, side & rear stage	4,426	SF	10.00	44,260
2	Remove non-historic wood framed furring & floors				-
	in the orchestra pit	715	SF	3.00	2,145
3	Install new hydraulic orchestra pit lift				See Theater
4	Install new wheelchair lift	1	EA	25,000.00	25,000
					-
	Total - Stage				133,225
H	**BACKSTAGE**				
1	Remove non-historic int partition walls at main flr	1	LS	1,500.00	1,500
2	Remove all stored items in backstage area incl				-
	costumes, props, etc				By Owner
3	Remove & replace flooring with new carpet	7,500	SF	5.00	37,500
4	Remove & replace exstg light fixtures & trim				See Electrical
5	Dressing room bathrooms on the main floor:				-
	Replace finishes & accessories	200	SF	50.00	10,000
	Replace all fixtures				See Plumbing
6	Preserve & protect historic plumbing fixtures &				-

LEVERTON & ASSOCIATES LLC

ITEMIZED FORMAT

OPINION OF PROBABLE CONSTRUCTION COST

				FILE NO:	822-1
				DATE:	04/25/13

ITEM NO.	DESCRIPTION	EST. QTY	UNIT	UNIT COST	TOTAL COST
	partitions in the basement dressing rooms	1	LS	1,000.00	1,000
7	Non-historic dressing room on west side of bsmt:				-
	Replace finishes & accessories	210	SF	50.00	10,500
	Replace all fixtures				See Plumbing
8	Remove & replace floor pans & wall finishes in				-
	all shower rooms	4	EA	1,500.00	6,000
9	Remove & replace non-historic interior doors	12	EA	1,400.00	16,800
10	Restore & refinish historic interior doors				-
	Double doors	1	EA	2,000.00	2,000
	Single doors	2	EA	1,000.00	2,000
					-
	Total - Backstage				87,300
I	**WINDOWS**				
1	Restore historic wood windows	14	EA	650.00	9,100
2	Salvage, restore & reinstall historic wood windows	2	EA	800.00	1,600
3	Replicate missing historic wood windows	5	EA	900.00	4,500
4	Remove non-historic steel window in non-historic				-
	backstage office	1	EA	150.00	150
					-
	Total - Windows				15,350
J	**SOUTH RESTROOM BUILDING**				
1	Reconfigure & enlarge building to provide for the				-
	required number of fixtures:				-
	Existing demolition/new work	1,000	SF	25.00	25,000
	Increased building area	200	SF	200.00	40,000
2	Repair deteriorated plaster on bottom 12" of bldg	132	SF	15.00	1,980
3	Replace all doors & hardware	6	EA	1,500.00	9,000
4	Provide new plumbing fixtures				See Plumbing
5	New vanity counter, solid surface	18	LF	200.00	3,600
6	Provide new toilet partitions	18	EA	1,050.00	18,900
7	Install quarry tile flooring & cove base	1,200	SF	20.00	24,000
8	Install new ceiling mtd light fixtures	8	EA		See Electrical
9	Install new ext wall mtd light fixtures	9	EA		See Electrical
10	Provide new toilet accessories & grab bars	1	LS	9,000.00	9,000
					-
	Total - South Restroom Building				131,480
K	**NORTH RESTROOM BUILDING**				
1	Interior demolition/new work	1,000	SF	25.00	25,000
2	Repair frames, replace ext doors & hdwe	6	EA	1,200.00	7,200
3	Provide new plumbing fixtures				See Plumbing
4	New vanity counter, solid surface	15	LF	200.00	3,000

LEVERTON & ASSOCIATES LLC

ITEMIZED FORMAT

OPINION OF PROBABLE CONSTRUCTION COST

				FILE NO:	822-1
				DATE:	04/25/13

ITEM NO.	DESCRIPTION	EST. QTY	UNIT	UNIT COST	TOTAL COST
5	Provide new toilet partitions	10	EA	1,050.00	10,500
6	Install quarry tile flooring & cove base	1,000	SF	20.00	20,000
7	Install new ceiling mtd light fixtures	8	EA		See Electrical
8	Install new ext wall mtd light fixtures	9	EA		See Electrical
9	Replace toilet accessories & grab bars	1	LS	6,000.00	6,000
					-
	Total - North Restroom Building				71,700
L	**STRUCTURAL IMPROVEMENTS**				
1	Patch & repair ext stucco on the Concession Bldg	1	LS	2,000.00	2,000
2	Probe restroom bldgs to determine if wall to roof				-
	anchorage exists - assume it does not exist	1	LS	4,000.00	4,000
3	Evaluate & patch cracks in seating bowl concrete	1	LS	15,000.00	15,000
4	Provide guy wires or x-bracing at truss lighting				-
	to remain - new lighting provided	1	LS		See Theater
5	Provide positive connections for all wood beams				-
	bearing on concrete that currently have none	1	LS	3,000.00	3,000
6	Clean & patch conc piers & spalling foundation				-
	elements in the bsmt with a mix including a				-
	corrosion inhibitor	100	SF	50.00	5,000
7	Remove & replace wood deck at rear of original				-
	bandshell structure				See Site
8	Replace missing stair structure at rear of				-
	original bandshell structure				See Shell
9	Improve drainage in the orchestra pit by adding				-
	additional drains & sump pump	1	LS	8,000.00	8,000
10	Replace damaged plywood at stage				See Stage
					-
	Total - Structural Improvements				37,000
M	**MECHANICAL IMPROVEMENTS**				
1	Install air conditioning & ventilation system to				-
	serve all of the backstage areas	7,400	SF	23.00	170,200
2	Install exhaust fans for all restrooms & showers				-
	in backstage areas	1	LS	5,000.00	5,000
3	Install new rooftop units & ductwork for the				-
	ticket office & concessions building	1,800	SF	23.00	41,400
4	Install exhaust fan for ticket office restroom	1	LS	1,000.00	1,000
5	Install exhaust fans for public restroom bldgs	2	EA	3,500.00	7,000
6	Provide exhaust for air compressor if reused	1	EA	1,000.00	1,000
7	Provide DDC control system for new ventilation	9,200	SF	3.00	27,600
	equipment				-
					-
	Total - Mechanical Improvements				253,200

LEVERTON & ASSOCIATES LLC

ITEMIZED FORMAT

OPINION OF PROBABLE CONSTRUCTION COST

				FILE NO:	822-1
				DATE:	04/25/13

ITEM NO.	DESCRIPTION	EST. QTY	UNIT	UNIT COST	TOTAL COST
N	**PLUMBING IMPROVEMENTS**				
1	Reconfigure & enlarge south public restroom -				-
	provide new plumbing fixtures				-
	Water closets	18	EA	1,500.00	27,000
	Urinals	8	EA	1,500.00	12,000
	Lavatories	6	EA	1,500.00	9,000
2	Rehabilitate north public restroom				-
	Water closets	10	EA	1,500.00	15,000
	Urinals	8	EA	1,500.00	12,000
	Lavatories	5	EA	1,500.00	7,500
3	Install water heaters for hand washing sinks	1	LS	7,500.00	7,500
4	Clean & verify the condition of all sanitary sewer				-
	piping with camera - allowance for repair	1	LS	25,000.00	25,000
5	Clean & verify the condition of all storm drain				-
	piping with camera - allowance for repair	1	LS	15,000.00	15,000
6	Replace all domestic water piping	1	LS	70,000.00	70,000
7	Replace non-historic bathroom in bsmt				-
	Water closets	2	EA	1,500.00	3,000
	Lavatories	2	EA	1,500.00	3,000
8	Salvage & re-use fixtures in two historic restrooms				-
	in the basement	10	EA	250.00	2,500
9	Replace non-historic bathroom on main level				-
	Water closets	3	EA	1,500.00	4,500
	Lavatories	3	EA	1,500.00	4,500
	Urinals	1	EA	1,500.00	1,500
10	Replace shower head & drain	4	EA	1,500.00	6,000
11	Relocate laundry room away from elect equip	1	LS	1,500.00	1,500
12	Replace plumbing & prov hot water in concession	1	LS	5,000.00	5,000
					-
	Total - Plumbing Improvements				231,500
O	**ELECTRICAL IMPROVEMENTS**				
1	Replace exstg 800A main swbd with larger swbd				-
	& provide switches	1	LS	50,000.00	50,000
2	Replace exstg panelboards, load centers, feeders,				-
	branch conduit, wiring & devices	15,500	SF	11.00	170,500
3	Equip connections - mech & theater	1	LS	70,000.00	70,000
4	Replace transformer room door	1	EA	1,500.00	1,500
5	Provide new fluorescent lighting throughout, incl				-
	occupancy sensors & lighting control panel	15,500	SF	8.00	124,000
6	Upgrade backstage & seating area emergency				-
	lighting & provide inverter	1	LS	35,000.00	35,000
7	Replace all aisle lighting	240	EA	200.00	48,000
8	Replace theatrical lighting				See Theater
9	Install GFI receptacles on roofs	1	LS	3,500.00	3,500

LEVERTON & ASSOCIATES LLC

ITEMIZED FORMAT

OPINION OF PROBABLE CONSTRUCTION COST

				FILE NO:	822-1
				DATE:	04/25/13

ITEM NO.	DESCRIPTION	EST. QTY	UNIT	UNIT COST	TOTAL COST
10	Replace deteriorated conduits on rooftops	1	LS	2,500.00	2,500
					-
	Total - Electrical Improvements				505,000
P	**ACOUSTICAL IMPROVEMENTS**				
1	Install back to back roll-up doors at the stage				-
	loading door	2	EA	5,000.00	10,000
2	Install sound absorbtion materials at stage area	1	LS	25,200.00	25,200
3	Install sound absorbtion materials in front or on				-
	the exstg walls at north side of seating bowl	1	LS	35,840.00	35,840
4	Theater AV systems	1	LS	635,000.00	635,000
5	Ambient noise compensation	1	LS	50,000.00	50,000
					-
	Total - Acoustical Improvements				756,040
Q	**THEATER IMPROVEMENTS**				
1	Install new stage lighting	1	LS	500,000.00	500,000
2	Inspect rigging, service & modify exstg system				-
	Cost range $25,000 to $250,000	1	ALW	100,000.00	100,000
	New 25 motorized linesets & controls in lieu of				-
	rigging refurbishment $600,000				-
3	Provide new motorized fire curtain $100-150K	1	ALW	125,000.00	125,000
4	Replace drapes, curtains, tracks & theatrical				-
	fabrics	1	ALW	100,000.00	100,000
5	Install new orchestra pit/stage lifts	1	ALW	700,000.00	700,000
6	Install new wheelchair lift in orchestra pit				See Stage
7	Provide new seats: good $150-190, better $200-				-
	$225, best $400 each	2,360	ALW	200.00	472,000
8	Provide non-fixed seats in flexible box seats				-
	area: $100-$150	400	ALW	125.00	50,000
9	Replace stage flooring & underlayment				See Stage
10	Replace aisle lighting				See Seating
11	Remove exstg concession platforms in seating				-
	area & prov new concession booth at front	1	LS	10,000.00	10,000
12	Install back to back roll-up doors at the stage				-
	loading door				See Acoustical
13	Inventory, clean & store costumes				By Owner
14	Provide new in-house mix position of sound				-
	equip with troughs to major equip locations				See Acoustical
					-
	Total - Theater Improvements				2,057,000

LEVERTON & ASSOCIATES LLC

ITEMIZED FORMAT

OPINION OF PROBABLE CONSTRUCTION COST

				FILE NO:	822-1
				DATE:	04/25/13

ITEM NO.	DESCRIPTION	EST. QTY	UNIT	UNIT COST	TOTAL COST
	LONG TERM IMPROVEMENTS (To Be Completed After to 2015)				
B	**SITE/OFFICE BUILDING**				
1	Construct new detached office & shop building				-
	on south side of site	3,000	SF	160.00	480,000
					-
	Total - Site				480,000
C	**BOX OFFICE & CONCESSIONS BUILDING**				
	Option One (Base Bid):				-
1	Demolish exstg box office bldg & 1961 wall	1,800	SF	15.00	27,000
2	New concessions & ticket building	1,800	SF	175.00	315,000
3	New marquee & electronic billboard	1	LS	25,000.00	25,000
					-
	Total - Box Office & Concessions Building				367,000
C	**BOX OFFICE & CONCESSIONS BUILDING**				
	Option Two (Alternate):				-
1	Remodel exstg box office & conessions bldg	1,800	SF	100.00	180,000
2	New marquee & electronic billboard	1	LS	25,000.00	25,000
3	Remove exstg 1961 wall & install new gated				
	entrances to the bowl	1	LS	30,000.00	30,000
					-
	Total - Box Office & Concessions Building (not included in total cost)				235,000
P	**ACOUSTICAL IMPROVEMENTS**				
	Option One - Approx. 2/3 of Seating Bowl Area (Base Bid):				-
1	Design & construct new seating bowl cover that				-
	integrates theater lighting & sound systems	24,000	SF	170.00	4,080,000
					-
	Total - Acoustical Improvements				4,080,000
P	**ACOUSTICAL IMPROVEMENTS**				
	Option Two - Approx. 1/2 of Seating Bowl Area (Alternate):				-
1	Design & construct new seating bowl cover that				-
	integrates theater lighting & sound systems	18,000	SF	170.00	3,060,000
					-
	Total - Acoustical Improvements (not included in total cost)				3,060,000

SECTION XII – APPENDIX

- Outdoor Seating brochures

Irwin Seating Company®

Model 131.46.35.35 Centurion

No. 131 Centurion Back

- semi-upholstered, one-piece, double-wall, blow-molded plastic back
- padded and upholstered
- ergonomic, contemporary design
- finished height of 32" with an envelope of 15"
- available on the No. 35 cast iron standards only
- available with Nos. 35, 36, and 12 seats
- number plates available
- available in five standard colors
- available with team or school logo molded into the back
- non-upholstered back is available (specify as No. 130)

No. 46 Seat

- padded, semi-upholstered seat constructed from high impact resistant polyethylene
- blow-molded, double-wall, one-piece construction with color consistent through the entire wall
- ergonomic design
- seat lift arms are constructed of high-tech engineered injection molded, glass-filled nylon
- seat Lift is achieved through the use of a compression spring and lubricated cam on high tech molded glass-filled nylon. Seat lift capability far exceeds requirements of ASTM F851.
- available in five standard colors

No. 35 Aisle Standards

- formed from class 25 grey iron
- integral armrests
- the No. 35 Aisle Standard can be used only with the No. 35 Center Standard
- available floor and riser mounted
- available with custom integral cast logo or 5-1/4" round screen printed logo plate
- available with 3rd party cupholder armrests or rear mounted cupholders

No. 35 Chair Platform

- standards formed from class 25 grey iron
- integral armrests
- available with the Senator and Centurion backs only
- available with the No. 45, No. 46 Patriot Seats and the No. 12 Upholstered Seat
- available with 3rd party cupholder armrests or rear mounted cupholders

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Model: 31.53.36.30
Patriot

No. 31 Patriot:
- a padded, semi-upholstered, one-piece, double-wall, blow-molded plastic back
- ergonomically designed
- envelope of 15”
- back wings constructed of 14 gauge steel
- non-upholstered back available (specify as No. 30)
- available in five standard colors

No. 53 Seat:
- a padded, semi-upholstered Patriot Seat constructed from high impact resistant polyethylene
- a non-upholstered seat is available (specify as No. 52)
- blow-molded, double-wall, one-piece construction with color consistent through the entire wall
- ergonomic design with recessed seat pad
- seat lift arms are constructed of engineered, injection-molded, glass-filled nylon
- seat Lift is achieved through the use of a compression spring and lubricated cam on high tech molded glass-filled nylon
- available in five standard plastic colors

No. 36 Aisle Standard:
- laminate surfaced aisle panel constructed from 45 lb. MDF
- available for floor or riser mounting
- available with tablet arms
- available with low-voltage aisle lights
- solid maple hardwood armrest surfaced with plastic laminate

No. 30 Chair Platform:
- standards are fabricated of 14 gauge steel to a 1” x 2-1/2” rectangular column
- Patriot chairs are available in nominal 18”, 19”, 20”, 21”, and 22” widths
- available floor or riser mounted
- available in seven standard powder coat colors
- available with tablet arms
- available with blow-mold plastic, integral steel, laminate surfaced hardwood or cupholder armrests

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Irwin Seating Company®

Model 135.135.70.40
Solara

No. 135 Solara Back
- padded & upholstered, one-piece, high impact polymer back
- ergonomic, contemporary design
- finished height of 31.7" with an envelope of 11.8"
- available for use on the rail system only
- available with Nos. 115 & 135 Solara seats
- available in five standard colors
- non-upholstered back is available (specify as No. 115)
- available with a rear-mount cupholder

No. 135 Solara Seat
- padded & upholstered, one-piece, high impact polymer seat
- ergonomic, contemporary design
- available for use on the rail mount system only
- non-upholstered seat is available (specify as No. 115)
- meets 600 lb. static load test and surpasses 100,000 cycles without failure in the ASTM-851-87 Test Method for Self Rising Seat Mechanisms
- seat lift mechanism is completely enclosed

Rail Mount System
- extruded anodized aluminum rail attached to attached to steel stanchions treated for outdoor use
- back, seat & integrated armrests are shipped fully assembled and ready for attachment to the rail with stainless steel hardware
- rail-mount system is available for floor or riser mounting
- center arms are available with a single No. 25 integrated armrests, double integrated armrests (No. 55), No 40 rail mount armrest (reg. or cupholder shown) or without an armrest (No. 15)
- aisle ends are available with the No. 25 integrated armrests (shown), No 40 rail mount armrest, without an armrest (No. 5), or with the No. 70 rail mount aisle panel

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Irwin Seating Company®

90.12.18.12 Citation

No. 90 Citation

- the Citation comes standard with 2" thick back poly
- nominal back height for the Citation is 34"
- rear panel of the No. 90 back is one-piece injection molded, high impact HDPE
- inner upholstery panel is constructed of 5-ply, 7/16" plywood
- back wings are formed from 14 gauge steel
- eight standard plastic colors
- available with an optional lumbar support
- available with tufted cover
- available for outdoor use

No. 12 Universal Seat

- the No. 12 Seat is available in a serpentine spring support component or with an ergonomic substrate and formed poly cushion
- the foundation is injection molded, glass filled polyethylene which is especially strong but not brittle
- the No. 12 Seat passes the 600 lb. static load test and surpasses 300,000 cycles without failure in the ASTM-851-87 Test Method for Self Rising Seat Mechanisms
- cover utilizes drawstring construction for an unwrinkled appearance and ease of replacement
- seat pivot is covered to prevent tampering
- available in full fold, 3/4 fold (standard) or 1/2 fold options
- available in seven standard plastic colors
- available with decorative wood veneer or upholstered bottom inserts
- some features not available for use outdoors

No. 18 Aisle Standards:

- formed from class 25 grey iron
- e-coated and powder coated for superior outdoor protection
- floor or riser mounted
- available with cupholder armrests or black, blow mold arms
- available with integral cast logo, screen printed logo plate (shown) or no logo

No. 12 Chair Platform

- formed from class 25 grey iron
- floor or riser mounted
- available with solid wood (stained or laminate surfaced) cupholder armrests or black, blow mold arms

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Irwin Seating Company®

91.12.18.12 Millennium

No. 91 Millennium
- the Millennium comes standard with 2" thick back poly
- nominal back height for the Millennium is 34"
- rear panel of the No. 91 back is one-piece injection molded, high impact HDPE
- inner upholstery panel is constructed of 5-ply, 7/16" plywood
- back wings are formed from 14 gauge steel
- eight standard plastic colors
- available with an optional lumbar support
- available with tufted cover
- available for outdoor use

No. 12 Universal Seat
- the No. 12 Seat is available in a serpentine spring support component or with an ergonomic substrate and formed poly cushion
- the foundation is injection molded, glass filled polyethylene which is especially strong but not brittle
- the No. 12 Seat passes the 600 lb. static load test and surpasses 300,000 cycles without failure in the ASTM-851-87 Test Method for Self Rising Seat Mechanisms
- cover utilizes drawstring construction for an unwrinkled appearance and ease of replacement
- seat pivot is covered to prevent tampering
- available in full fold, 3/4 fold (standard) or 1/2 fold options
- available in seven standard plastic colors
- available with decorative wood veneer or upholstered bottom inserts
- some features not available for use outdoors

No. 18 Aisle Standards:
- formed from class 25 grey iron
- e-coated and powder coated for superior outdoor protection
- floor or riser mounted
- available with cupholder armrests or black, blow mold arms
- available with integral cast logo, screen printed logo plate (shown) or no logo

No. 12 Chair Platform
- formed from class 25 grey iron
- floor or riser mounted
- available with solid wood (stained or laminate surfaced) cupholder armrests or black, blow mold arms

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Model 39.46.35.35
Senator

No. 39 Senator Back
- non-upholstered, one-piece, double-wall, blow-molded plastic back
- nostalgic, slat-back design with molded ergonomic compound curve
- nominal height of 32" with an envelope of 15"
- available on the No. 35 cast iron standards only
- number plates available
- available in five standard colors

No. 46 Seat
- blow-molded, double-wall, one-piece construction with an upholstered pad
- constructed from high impact resistant polyethylene
  with color consistent through the entire wall
- ergonomic design
- seat lift arms are constructed of high-tech engineered injection molded, glass-filled nylon
- seat Lift is achieved through the use of a compression spring and lubricated cam on high tech molded glass-filled nylon. Seat lift capability far exceeds requirements of ASTM F851.
- available in five standard colors

No. 35 Aisle Standards
- standards formed from class 25 grey iron
- integral armrests
- for use with the Senator and Centurion backs
- available with the Nos. 45, 46, 47 stadium seats or the No. 12 Upholstered Seat
- available in 13 standard powder coat colors
- aisle standards available with row letter plates
- available floor and riser mounted
- custom integral cast logo available
- available with 3rd party cupholder armrests or rear mounted cupholders

No. 35 Chair Platform
- standards formed from class 25 grey iron
- integral armrests
- for use with the Senator and Centurion backs
- available with the Nos. 45, 46, 47 stadium seats or the No. 12 Upholstered Seat
- available in 13 standard powder coat colors

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Model 39.12.35.35
Senator

No. 39 Senator Back
- Non-upholstered, one-piece, double-wall, blow-molded polyethylene back
- Nostalgic, slat-back design
- Finished height of 32" with a front-to-back envelope of 15"
- Available with plastic No. 45 seat, padded No. 46 seat, or deluxe No. 12 seat
- Number plates recessed into chair back

No. 12 Seat
- the No. 12 Seat is available in a serpentine spring support component or with an ergonomic substrate and formed poly cushion
- the foundation is injection molded, glass filled polypropylene which is especially strong but not brittle
- the No. 12 Seat passes the 600 lb. static load test and surpasses 200,000 cycles without failure in the ASTM-851-87 Test Method for Self Rising Seat Mechanisms
- cover utilizes drawstring construction for an unwrinkled appearance and ease of replacement
- seat pivot is covered to prevent tampering
- available in full fold, 3/4 fold (standard) or 1/2 fold options
- available in seven standard plastic colors
- available with decorative wood veneer or upholstered bottom inserts

No. 35 Aisle Standards
- standards formed from class 25 grey iron
- integral armrests
- for use with the Senator and Centurion backs
- available with the Nos. 45, 46, 47 stadium seats or the No. 12 Upholstered Seat
- available in 13 standard powder coat colors
- aisle standards available with row letter plates
- available floor and riser mounted
- custom integral cast logo available
- available with 3rd party cupholder armrests or rear mounted cupholders

No. 35 Chair Platform
- standards formed from class 25 grey iron
- integral armrests
- for use with the Senator and Centurion backs
- available with the Nos. 45, 46, 47 stadium seats or the No. 12 Upholstered Seat
- available in 13 standard powder coat colors

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Seating Proposal

Valid for 90 Days

DATE: **28 March 2013**

TO: **Carmen Pauli**
Heritage Architects

REFERENCE: **Starlight Bowl – San Diego**
Seating Proposal – Budget Pricing
FOB San Diego, and Installation Included
Does not include sales tax or bonds, removal of existing seating or concrete repair.

Option 1:
3,000 Chairs – Solara Model # 135.135.70.25
#135 Semi-Upholsterd Back
#135 Semi-Upholstered Seat with lift mechanism – 100% fold
#70 Beam Mounted System – Riser mounted to concrete risers
#25 End Panel
CMI O'Vinyl
Seat and Row Tags
Outdoor Treatment
1% Spares – Attic Stock
ADA Fip-up arms and moveable bases
Freight
Installation

Price Per Chair: $163.34
Total Price for Option 1: $490.20

Option 2:
3,000 Chairs – Patriot Model # 31.53.18.30
#31 Semi-Upholstered Back
#53 Semi-Upholstered Seat with lift mechanism – ¾ or 100% fold
#18 End Panel
#30 Steel Standard
CMI O'Vinyl
Seat and Row Tags
Outdoor Treatment
1% Spares – Attic Stock
ADA Fip-up arms and moveable bases
Freight
Installation

Price Per Chair: $171.35
Total Price for Option 2: $514,050.00

Option 3
3,000 Chairs – Centurion Model # 131.46.35.35
#131 Semi-Upholstered Back
#46 Semi-Upholstered Seat with lift mechanism – ¾ or 100% fold
#35 Cast Iron End
#35 Cast Iron Standards
CMI O'Vinyl
Seat and Row Tags
Outdoor Treatment
1% Spares – Attic Stock
ADA Fip-up arms and moveable bases
Freight
Installation

Price Per Chair: $180.15
Total Price for Option 3: $540,450.00

Option 4:
3,000 Chairs – Patriot Model #31.12.18.30
#31 Semi-Upholstered Back
#12 3" Molded Foam Seat with lift mechanism – ¾ or 100% fold
#18 End Panel
#8 Steel Standards
CMI O'Vinyl
Seat and Row Tags
Outdoor Treatment
1% Spares – Attic Stock
ADA Fip-up arms and moveable bases
Freight
Installation

Price Per Chair: $180.52
Total Price for Option 4: $541.560.00

Option 5:
3,000 Chairs – Centurion Model #131.12.35.35
#131 Semi-Upholstered Back
#12 3" Molded Foam Semi-Upholstered Seat with lift mechanism – ¾ or 100% fold
#35 Cast Iron End
#35 Cast Iron Standards
CMI O'Vinyl
Seat and Row Tags
Outdoor Treatment
1% Spares – Attic Stock
ADA Fip-up arms and moveable bases
Freight
Installation
Price Per Chair: $188.59
Total Price for Option 5: $565,770.00

Quote offer based on Irwin Seating Co. standard products, finishes, and terms and conditions.

IRWIN SEATING COMPANY

Sent via e-mail 03-28-13

Name: Clark Dudley
Title: Western Region Sales Manager