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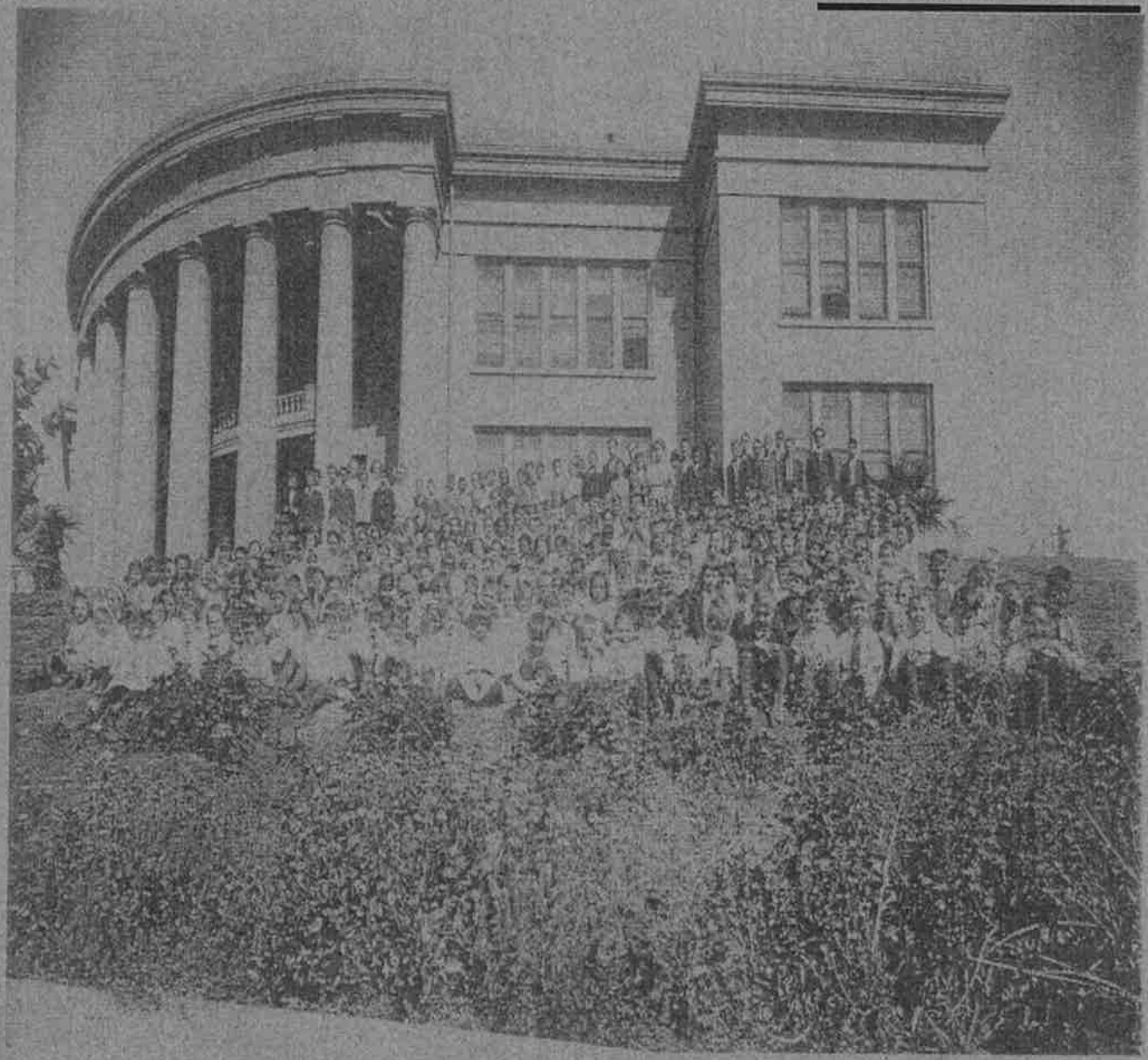

HISTORIC SONORA DOME FEASIBILITY STUDY

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Introduction

The Sonora Area Foundation commissioned the feasibility study for the Historic Sonoma Dome. The primary goals and objectives are to identify uses for the building including the multi-purpose Dome Room on the 2nd floor, integrate the American with Disabilities Act, identify the existing building systems and their condition, and to provide guidance in preserving and enhancing this historic structure.

The Historic Sonora Dome is a 3-story, poured-in-place concrete building built in 1909. The building is located at 251 South Barretta in Sonora, California. The building is situated atop a hill that rises steeply on all sides. The building has been continually maintained throughout its existence, and is therefore, in very good condition. The building consists of three floors that can be occupied. The building was originally built as a school and has had various uses throughout its history although some type of school or classroom function has always been contained within its walls. The dome is a very significant feature of the building and can be seen from throughout the city.

Photo 1.1: Historic Sonora Dome Building recently completed c. 1910

The 1st floor level is approximately 6½ feet to 7 feet above the surrounding grade, although this varies slightly around the building. The lowest level, the basement, has a concrete slab floor and sections that are inaccessible (unexcavated) as well.

The 1st and 2nd floor framing is constructed of wood joists with a solid wood subfloor system. The roof framing system also consists of wood framing. There is an interior dome at the 2nd floor ceiling, which is one of the signature elements of the building. This domed ceiling is directly below the exterior dome on the roof. Although they are directly related they are constructed of two separate wood framed domed structures that are structurally integral to one another. The ceiling level dome is fairly flat while the roof dome is emphasized by more vertical elements.

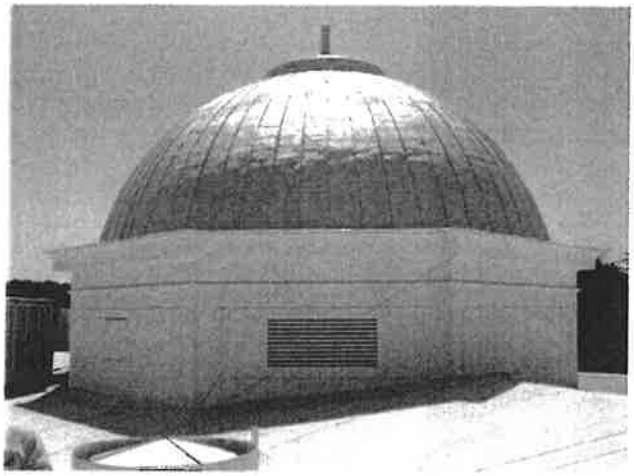


Photo2.1: The dome as seen from the roof. The original sheetmetal roofing has been covered with foam roofing.

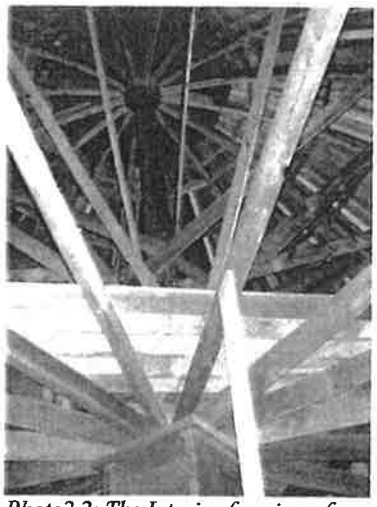


Photo2.2: The Interior framing of 2 dome roof system.

The windows throughout the building are wood double-hung sash with single pane clear glazing. Some of the windows are still operable, others have had the sash cords broken and the weights are no longer operating.

The building's main areas of concern are the multiple floor level changes that create major accessibility issues and lack of restroom and ADA restroom facilities. There are small restroom facilities on the basement floor level near the location of the original locker rooms. The restroom facilities on the 1st floor level are located within the odd shaped triangular rooms near the center of the floor plan. These restrooms also have multiple floor changes within them. The second floor currently does not have any restrooms. The floor level changes are a problem for the reconfiguration of the public interior spaces. Access to all spaces by the physically disabled is required in public buildings.

The building sits on an impressive site situated on top of the hill, but leaves very little room for parking close to the historic structure. There is access completely around the building on asphalt roads or concrete sidewalks but not much additional space for anything else. The front side of the building does have a small grass area that sets the building back slightly from the edge of the hill.

The original roofing consisted of sheet metal panels, but has since been covered with a foam roofing system. "Foamed" is the process by which a spray-on roofing foam is applied over the top of the existing roofing. The foam is an insulating and waterproofing material used to add life to an existing roof system without replacing the entire roof. This foam roofing was set into place to stop the leaking, while still keeping the historic roof intact.

The foam roof system on the main building does not alter the historic integrity of the building, as the roof is not an integral aspect of the exterior look of the building. However, the foam over the dome portion of the roof does effect the original texture and color of the historic roofing and should be removed. The foam could be removed and the original sheet metal roof restored or replaced with like materials.

Floor Levels

One of the larger obstacles to the accessibility of this structure is the multiple floor levels throughout the building. There are six different floor levels on the three floors of this building, not counting the mechanical and storage rooms in the basement.

Photo 3.1: Main Stair at the front entry. It also steps down to the left of the stair. The landing seen in this photo is only about half way up to the 2nd floor level.

Photo3.2: Change in level at the hallway on the 1st floor level.

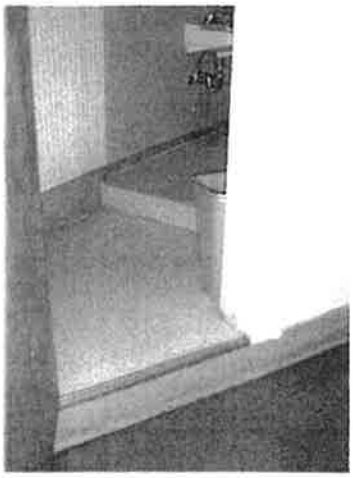


Photo3.3: Hallway to restroom change in levels.

The main level (first floor) of the building is 6½ to 7 feet above grade. The Americans with Disabilities Act (ADA) and California Title 24 to require that the majority of these floor levels and spaces be accessible. This will require access from grade to each floor level. There are three ways to gain access and meet ADA required codes. The three options are ADA accessible ramps, electrical lifts, or an elevator. A ramp to gain access from grade to the 1st floor would be about 80 feet long and this still does not give access to the other floors. Interior ramps to go from floor to floor would require too much valuable floor space to be feasible. An electrical lift could be used but each lift can travel only a maximum of 12 feet of vertical lift. Therefore a minimum of at least two lifts would be required to travel from the basement to the 2nd floor. With the existing varying floor levels there would be no way of accessing all levels without losing a lot of floor space and requiring multiple lift units throughout the building. At a cost of $18 to $ 20,000 per unit this is not an economical solution. The best solution from a floor area usage and economical point of view is to install a hydraulic elevator system.

Photo 3.4: Back entry stairs. The proposed detached elevator would be set to the right of the stair

There are two ways to make an elevator work at most existing buildings. The first would be to install it within the existing structure. The second would be to build a stand-alone elevator and connect it to the building with exterior walkways. The first option would be much more expensive, harder to accomplish and use up more floor space than the second option. The stand-alone elevator is the most sensible solution for this particular structure. The elevator should be placed on the backside of the building, north of the back entry. This is the best location for the elevator tower because the majority of the floor levels can be served from this location (see attached plans). Locating the tower on the backside of the building north of the existing stair and canopy would be the most inconspicuous location. The three areas that would remain inaccessible in this solution would be the front entry doors, front entry porch, and the stage in the auditorium on the second floor.

Historic Register

One of the first steps that is necessary for the restoration of this building is to have it recognized on an official register of historic places. Our recommendation would be to eventually have the building placed on the National Register of Historic Places. At the very least it should be placed on Tuolumne County's or Sonora's historic register. However we also recommend not going through with this until some final decisions have been made on the direction that is going to be taken for the overall project. It is very difficult to get a building off of a register once it has been placed onto it. In our opinion, the best course of action is to complete all the nomination forms for the NRHP and submit them subject to a determination of eligibility. Grants can be applied for when the building is determined eligible. At that point, the official listing would be a formality. When a building has been listed on the historic register it does not mean that changes can not be made. It does, however, affect the major character defining elements like the Dome. The NRHP would prefer that these elements be left alone or restored and not removed or altered. Our opinion is that all of the proposed solutions and uses for the building will not effect the building's National Register eligibility. Also our opinion is that the restoration and changes herein described will not be rejected by any of the registers.

One of the advantages of placing the building on a historical register is the ability to be able to utilize the California Historical Building Code. Once the building has been recognized as a historic building on any of the above mentioned official registers, the CHBC can be used. This code allows us leeway with many different aspects of the Uniform Building Code. Two major

ways the building will benefit by being able to utilize the CHBC are building accessibility and structural requirements. Typically ADA accessibility is required by the Uniform Building Code and will be necessary to obtain the best reuse possibilities for this structure. The Americans with Disabilities Act requires people with physical disabilities to have complete access throughout public buildings from the front entrance of every building. As mentioned in the previous paragraph, we can comply with access to the entire building, although we cannot easily comply with the aspect of the ADA requirements for the front entrance. The California Historic Building Code allows certain accessibility exceptions such as not having to have an accessible front entrance. The CHBC also allows structural alternatives for buildings listed on official historical registers. Structural alternatives would allow the building to be public-safe without bringing it up to the full extent of the current UBC. This will usually save historic building features and construction costs.

Parking

The largest obstacle for the feasible reuse of the Historic Sonora Dome Building is the lack of parking. The location of the building upon the hilltop within a residential neighborhood with very narrow streets makes obtaining parking a very difficult task. The steepness of the hillside along with the narrow streets is not conducive for street parking. The only readily available parking would be the 36 spaces that are down the hill near the portable school buildings. In addition, there are 5 spaces available at the top of the hill just south of the building itself. All of the reuse possibilities discussed herein will require a minimum of 60 additional spaces than are impossible to obtain on the site as it exists.

One of the more difficult issues with the reuse of the Sonora Historic Dome is lack of parking. Parking will be required for any private use of this building. Depending on which scenario is determined to be the most desirable, 70 to 100 additional parking spaces is required by local planning code requirements (see attached occupancy vs. parking tables). The maximum parking now obtainable at the top of the hill is 6 spaces, which must include one ADA required van accessible space. Down the hill at the adjacent school campus there are approximately 36 spaces, none of which are marked as ADA accessible spaces. In a conversation with Ed Wyllie, Sonora Building and Planning Department regarding the parking issues, he indicated that Sonora has an "in lieu fee structure" in place for parking reductions. This means that the City Building and Planning Department will work with the applicant to determine a fee for the number of lacking parking spaces necessary to meet the occupancy requirements. This fee is placed into a fund to provide maintenance or improvements to existing city owned public parking lots. The problem with this is that there are no city owned lots near the Dome site. Mr. Wyllie indicated that the city would be willing to work with the ownership on the parking requirements for this project. Although this may solve the parking requirements it does not solve the need for parking. All best scenarios for the reuse of the building would require parking to make the building use viable. Some of the best uses of the building could require the parking only during off-hours. Night or extended classes, or specialty classes mostly taking place after school hours, would be one possibility. Assembly uses for the auditorium would most likely occur at nights or on weekends. The worst case parking conflict would be between the existing school use down the hill and a building use scenario involving the building being utilized as office space. Both the existing school and the uses at the Dome could occur at the same time. The more day time activities that occur at this site the more conflicts that will occur with the existing school use at the bottom of the hill, assuming that the school use is going to continue.

Parking Possibilities

The land around the backside of the building at the base of the hill is one possible location for parking that would be required for this and the future site possibilities. The land to the north and east of the building, currently a soccer field, could work very well for a multi-story-parking garage.

Photo4.1: This historic photograph indicates the size of the hill and shows the land behind the building that could be used for a parking structure.

This soccer field is below the top of the hill which could allow the upper level of the garage to finish level with the finish grade at the top of the hill or at the main building floor level. This would keep the majority of the garage hidden, which would then not disrupt the important view shed to and from the Dome building. This garage could be approximately three stories high and have spaces for 324 cars. The access to the garage would come from South Barretta Street just north of the building through an existing under utilized park. Unfortunately this park is higher in elevation than South Barretta Street. To enter from this direction would require extensive regrading. Another entrance might come from the south side of the property near the portable school buildings. This road may not require as much cutting and regrading of the property, but it would be a lot longer and use more of the property than might be desirable.

Photo 4.2: Current view behind the dome building looking to the north and east. Looking towards the soccer field, one possible location for the future parking garage.

Photo 4.3: South and east of the dome building. In the distance is the portable school buildings and adjacent parking. One possible location for the future parking garage or lot.

There is another location that could potentially work for ground level parking or a parking garage. This location is south and east of the Dome where the portable school buildings are located. This solution however would require that the school buildings be removed or relocated. This would not be able to be accomplished until the school district has the ability to relocate these buildings or until they have moved into a new school facility. A ground level parking lot in this location could potentially hold 140 cars. A parking structure in this location at three stories high could almost triple that number. A garage at this location may not be as attractive to the neighborhood as the first solution. The first solution has the garage mostly hidden by the hill and hidden from most view sheds. This second location does not offer that opportunity. It could be an imposing structure in a historical residential neighborhood.

Neither of these locations or solutions solves the problem of the narrow streets approaching the project site. When the building is fully occupied there could potentially be a large amount of traffic driving through the narrow quiet residential streets. This is an obstacle that will have to be overcome by working with the community and the Sonora Building and Planning Department.

Parking garages do have some potential opportunities of offsetting some of the overall project costs. Charging users to park can provide some income stream. Although the initial cost to construct the parking garage is not inexpensive, the maintenance costs for this type of a building are minimal. The only way to make the expense of a parking garage economically feasible is to have a consistent need for the spaces. Using a garage for events that occur occasionally will not pay for the cost of constructing the garage. Keeping all of this in mind a parking garage may be the best way to provide the spaces that are needed to make this project viable.

Heating, Ventilating and Air Conditioning

The existing heating, ventilating and air conditioning system consists of a boiler in the basement and cast iron radiators throughout the building. The existing steam system was also partially converted with ductwork and fans sometime in the past. There are duct shafts vertically throughout the building allowing for heat to travel from the basement up to the 2nd floor. One big concern with the ductwork in the basement where the ducts come off of the boiler into and down the hallway is that they leave a clear head height of only seven feet. The existing system is antiquated and very inefficient. The many vertical chases throughout the building take up valuable square footage that could be better utilized. The existing system also makes it very hard to control the temperatures in various areas individually. The system is not zoned for multiple tenants or functions. If there were a large group of people within the dome space a tremendous amount of heat gain would be occurring throughout this space. The thermostat could potentially shut off the heating to all of the spaces because of the large heat gain detected within the space. Unfortunately there is nothing to register how cold some of the other spaces may be. Therefore no heat would be sent to the other spaces causing the occupants outside of the central dome space to be uncomfortably cold.

The only cooling that exists in the building currently is the swamp cooler on the roof that supplies the dome space, and the various window mounted air conditioning units that supply some individual spaces. These units are both very inefficient and noisy. They also take away from the simple beauty of the building's façade. These window units do not occur in every space either, hence some rooms get cooling while others receive nothing.

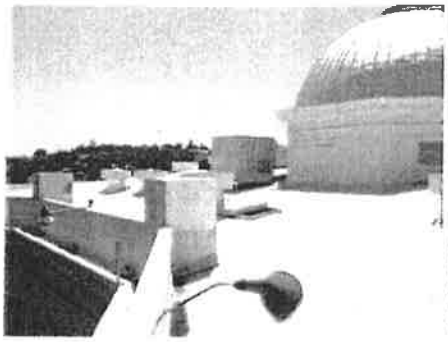


Photo 5.1: Roof mounted swamp cooler for the dome space to the left of the dome.

Photo 5.2: Window mounted air-conditioning units on the back side of the building.

Photo 5.3: Window mounted air-conditioning units on the on the front side of the building.

The reuse of this structure should require a new HVAC system to be designed and installed. This system should be capable of separating each floor and each individual tenant space. This should be accomplished for both energy efficiency and for leasibility.

Electrical System

The existing electrical system is in fairly good condition. The system has been added onto and upgraded many times throughout the years of continuous use of this structure. The main services to the building have been upgraded and enlarged. As is always the case when electrical systems have been consistently modified over the years, there are some code deficiencies and some other areas that should be corrected. Also there is conduit and wire exposed across interior and exterior walls. There is not necessarily a code problem or danger with this but it can sometimes hinder the look of the historic building. Today's building requirements for electricity, phone, and data lines far exceed what this building was capable of providing. As mentioned earlier though the main service to the building has been upgraded and can be expanded to comply with all of these requirements. The system should be organized, corrected, modified, and extended to all of the necessary locations. This retrofit of the existing system should also take care of the code deficiencies. The upgrading of the HVAC system will also require some additions and modifications to the existing electrical system. The conclusion is that the electrical system, although sufficient to begin with, should be coordinated and modified to meet all of the new building requirements.

Possible Building Uses

The Building lends itself very well to a mixed use environment for a variety of reasons. Once the accessibility issue has been solved the building becomes available for a variety of uses. The availability of large and small spaces without major construction changes is one of the main reasons the building can be so versatile. The auditorium on the second floor could provide space for a small conference facility, theatrical and musical productions, gallery space, and rental space for events such as weddings and receptions or public meetings. Most of the classrooms are large enough to be utilized for hands on art spaces such as weaving classes, pottery, or painting classes. The classrooms are also large enough for adult continuing education classes. Some of these classrooms could also be sub-divided with movable partition walls or permanent walls to make smaller classrooms although this would probably not be necessary.

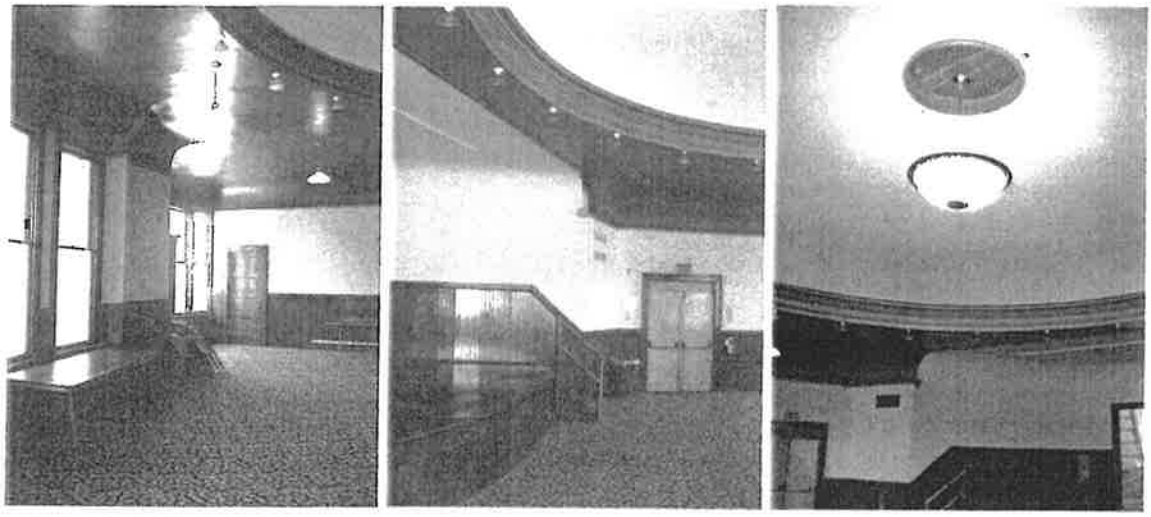
The office space possibilities are endless. Small office spaces already exist in the Dome, and larger spaces could be sub-divided with permanent walls or partitioned with systems furniture. Systems furniture consists of partition walls and desk compartments that are pre-manufactured in various configurations – usually purchased and installed by the users of the spaces. Most of the classroom spaces could be converted to office space. Most cities have a need for small one to three room office spaces. Executive office suites have been proving themselves as a desirable commodity. An executive office suite is one that has the following characteristics: the building provides, as part of the lease, a general secretary who handles the phone system, mail, scheduling the conference rooms, and other common tenant duties. There are separate services that can be offered to each tenant, such as copying services, typing services, storage, etc. These services would be charged to each tenant as a fee over and above their leases on an as needed basis. The office spaces could be arranged from a single room office to a three or four room suite. One of the allures of executive office suites is having the extra services available when they are needed without having to keep someone on the payroll during the times that they are not needed. Small businesses find this very valuable.

Small retail spaces that are directly connected to other uses in the building could also be a viable tenant. A museum or gift shop connected with the gallery space or a coffee/dessert/snack shop connected to a theater may do very well if the hours of operation are coordinated with events

taking place at or near the Dome. If small culinary teaching classes were held in the Dome, a once a week or once a month tasting or dinner could be combined with an art opening or exhibit. There are a lot of possibilities of combining events and the businesses when most of the businesses are related to the arts community.

A rental space that is strictly a destination place could also work well, although the parking availability may hinder this type of business. A business that depends on walk in traffic and parking would not work well at this particular building and location.

The auditorium has some of the most potentially diverse possibilities. As a rental space for weddings, receptions, reunions, and other small gatherings it becomes quite a revenue generating space. With a good scheduling coordinator this space could also be offered up for community functions and fundraisers. Fundraisers such as auctions, crab feeds and Monte Carlo Nights are some of the many types of events that could be held at the auditorium or at the exterior grounds around the Dome. Working with and for community organizations would maintain the spirit of community involvement on which the building was first conceived and constructed.



Photos 6.1, 6.2, and 6.3: Auditorium or Dome Space. Notice the large double hung wood windows, high ceiling, and the extraordinary dome ceiling.

The existing restrooms will need to be upgraded and additional facilities added for any of the uses described. Disabled accessible Men's and Women's restrooms will be required on each floor. To attract and service the future tenants and their clients, convenient restroom facilities will be a necessity. Currently there are non-accessible restrooms available in the basement and on the first floor (the basement restrooms do not appear to be functional). There are no restrooms located on the second floor. The existing restrooms are neither plentiful, accessible, convenient, or attractive. When designing the new restrooms consideration should be given to providing accessibility while fitting into the historic context of the building.

Another consideration is to make the rental space (auditorium) more attractive and financially feasible with the addition of some sort of food service kitchen. This kitchen could be used to warm and prepare food for sale and for special events. It could also be used as a full-blown catering kitchen for events at the Dome or for off site catering opportunities. The kitchen could be used by an on site coffee/dessert/snack shop if the scheduling and equipment is handled correctly. The cost and space required of a full service kitchen may not be the answer for this building but at least a small scale prep-warming kitchen should be considered.

The Structural System
(Prepared by Kit Miyamoto of Marr Shaffer & Miyamoto Structural Engineering)

The Existing Structure:

1.1. The subject project is a two-story Concrete Structure with a partial basement, built in 1909 A.D. The original usage of the structure was a school. The structure currently houses high school district offices and high school classrooms. The footprint is approximately 66 feet by 152 feet.
1.2. The floor and roof diaphragm consist of flexible wood sheathing. It appears that wood joists span from exterior walls to the corridor bearing walls. The bearing walls are made of concrete.
1.3. We did not observe any evidence of major structural distress or failures. It appears that the structure has been well maintained.
1.4. There is no evidence of past seismic upgrade, however, there is no evidence of structural distress by past seismic events.

Potential Seismic Deficiencies:

2.1. Concrete wall out of plane failures: The concrete walls may dislodge and cause the roof or floor to collapse, since there are no substantial positive connections at the diaphragms and exterior walls.
2.2. Roof and floor diaphragm failure: The existing diagonal sheathing may not be adequate to provide seismic shear capacity.
2.3. In-plane failure of the concrete shear walls: The concrete walls may fail in shear, since the ductile details are not provided pre-1973 concrete structures.
2.4. Falling hazard of the dome ceiling: In the event of a major seismic event, the plastered dome ceiling may become a falling hazard to the auditorium room.
2.5. Falling hazard of the entrance structure: In the event of a major seismic event, the plastered entrance may become a falling hazard.
2.6. Foundation instability: It appears that soil has been excavated underneath the pad footings at the basement space. This causes unstable conditions.

Potential Seismic Repair Strategies:

3.1. Concrete wall out of plane failures: The epoxy bolts and steel angles should be used to anchor concrete walls.
3.2. Roof and floor diaphragm failure: The existing diagonal sheathing should be sheathed with new plywood to provide adequate seismic shear capacity.
3.3. In-plane failure of the concrete shear walls: The concrete walls may be reinforced with fiber-reinforced plastic to provide an adequate lateral support.
3.4. Falling hazard of the dome ceiling: The existing plaster ceiling should be sheathed with new plywood to provide adequate seismic shear capacity.
3.5. Falling hazard of the entrance structure: The existing plaster ceiling should be sheathed with new plywood to provide adequate seismic shear capacity.
3.6. Foundation instability: the soil under the footings should be reinforced with reinforced concrete. (Shot Crete)

Recommendations:

The subject project is in good condition and located within a moderate seismic hazard area (Zone 3 per 1997 Uniform Building Code). The seismic deficiencies are not unusual for this type of structure. At minimum, this office feels that item 3.1, 3.4, 3.5, and 3.6 should be provided for protection of life safety. These repair items are very cost effective ways to improve seismic capacity of this structure. If re-roofing is a part of plan for architectural upgrade, new plywood sheathing should be provided over the existing roof sheathing as part of item 3.2. The item 3.3 should be provided if an adequate funding exists.

Limitations:

The observations and recommendations contained within this report are based on a walk through investigation of the subject project. This report does not express or imply any warranty of the existing structure and was developed based on visual observations made during a site visit of the existing structure. Construction documentation phase is required for final recommendations.

The Restoration

The Historic Sonora Dome deserves to be restored because it is one of the best examples of early 20th century public schools in California. The main exterior building elements such as the exterior walls, the windows, the stairs, and the dome itself should be restored. Most of the first floor spaces have been maintained throughout the years. When the structural retrofit is designed and implemented some restoration of the ceilings and upper walls will be required. The flooring should be addressed in terms of determining the best possible flooring for the use of the building and implementing that strategy. For instance, most office spaces are better suited for carpet flooring. The existing historic linoleum flooring throughout the hallways should be cleaned and protected to remain in place. Some additional research should be done to determine the original restroom finishes. The flooring and wainscot were most likely tile. The new restrooms should be designed to retain the historic provenance of the original restrooms, and new finishes should match the original finishes of the restrooms. We are not trying to replicate them, but we are trying to make them feel like they are part of the building and not an addition. The interior woodwork such as the windows, doors, trim, baseboards, etc. should be restored. They have taken quite a beating over the years and restoration of these features will do much to bring the original beauty and elegance back to the building.

The second floor is exhibiting much more damage than the lower floor. Most of this damage was caused by leaks through the original roofing.

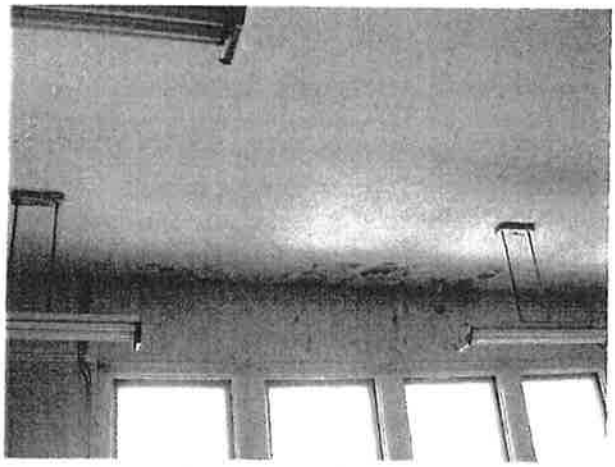


Photo 7.1: Water damage at the 2nd floor ceilings and walls.

Most if not all of these leaks were repaired when the roof was covered with foam roofing. We recommend removing the roofing down to the original roof sheathing as indicating in the structural section above. Structurally we can improve the roof diaphragm and then install a single ply roofing system. Although this is not a historic roofing system it is one of the most cost-effective roofing systems when you factor in durability, ease of maintenance and longevity. As this roof cannot be seen when looking at the building from any viewpoint we believe it will not detract from the building's exterior appeal. The Dome itself on the other hand should be restored with flat seam sheet metal roofing to match the original roofing. This roofing is essential to the overall appearance of the building. Today's metal roofing materials will provide an excellent method to cover the dome. Designed, installed, and maintained correctly the metal roofing should not leak and will provide as many years as the single ply roofing system. The second floor ceilings and walls should also be restored from the water damage and the damage that may be caused by the structural retrofit. The Auditorium has been recently upgraded with paint, carpet and light fixtures and it looks beautiful. However, there is though additional work to be completed here as well. The plaster ceiling is showing cracks and stresses. Restoration should be performed to ensure that the ceiling is secured to the structure above. Cracks should be repaired. The woodwork and painting should be restored to bring back the original luster. The stage is showing some wear and should be restored. The reality is that the total interior of the building needs a general cleaning and "sprucing" up. This would include new interior finishes such as paint and carpet. A color scheme should be set and maintained for the entire building as a whole. This scheme could be based on the historic/original colors if evidence of this scheme is still available or an entirely new scheme could be provided.

BUILDING CODE CHECK

Square Footage

Basement:	5,830 sq. ft.
1st Floor:	7,400 sq. ft.
2nd Floor:	7,400 sq. ft.
Total:	20,630 sq. ft.

Occupancies and Load Factors (UBC Section 304. See Pages 17-19 of this report for occupancy counts)

Auditorium:	
A-3 occupancy	15 sq. ft./person
Office:	
B occupancy	100 sq. ft./person
Classrooms:	
B occupancy	20 sq. ft./person
(Adult students such as continuing education classes etc.)	
Classrooms:	
E-1 occupancy	20 sq. ft./person
(12^{th} grade and younger with more than 50 students)	
Classrooms:	
E-2 occupancy	20 sq. ft./person
(12^{th} grade and younger with less than 50 students)	

UBC Section 303.2.2.2: Group A division 3 occupancies above the 1^{st} floor shall be not less than 1 hour fire resistive construction and separated from the 1^{st} floor by 1-hour fire resistive construction.

UBC Section 220 Story: is that portion of a building included between the upper surface of any floor and the upper surface of the floor next above, except that the topmost story shall be that portion of a building included between the upper surface of the topmost floor and the ceiling or roof above. If the finished floor level directly above a usable or unused under-floor space is more than 6 feet above grade, as defined herein, for more than 50% of the total perimeter or is more than 12 feet above grade, as defined herein, at any point, such usable or unused under-floor space shall be considered as a story.

Per the UBC, the building would be classified as a Mixed-Use occupancy that is mostly a B occupancy. Therefore, in general, the building would be considered a B occupancy.

The type of construction that most closely resembles the building as it is constructed is a Type III – N.

Table 5-B – Basic Allowable Building Heights and Basic Allowable Floor Area, indicates that a Type III- N building may be two stores in height maximum, and 12,000 sq. ft. per story for a total of 24,000 sq. ft.

By definition of a story the Sonora Historic Dome is a three story building and therefore can not be classified as a Type III-N building. It would have to be classified as a Type V-One-hour building, which can be up to four stories in height and up to 18,000 sq. ft. per floor. The building does not meet the requirements for 1-hour construction throughout the interior spaces.

The 1998 California Historical Building Code is the answer to allowing this non-conforming structure to be used without undue costs and hardships. Section 8-302.5 Maximum Height: The maximum height and number of stories of a historical building shall not be limited because of construction type, provided such height or number of stories does not exceed that of its designated historical design. The CHBC's intent is to facilitate the preservation and continuing use of qualified historical buildings or properties while providing reasonable safety for the building occupants and access for persons with disabilities. It provides alternative solutions with a

cost effective approach to providing for the reasonable safety of the occupants and users. These regulations require enforcing agencies to accept reasonably equivalent alternatives to the regular codes.

The use of the CHBC will be an important tool in the restoration of the Sonora Historic Dome. To utilize this tool the building will have to meet Section 8-218 of the CHBC, which states; "Any building, site, structure, object, district or collection of structures, and their associated sites, deemed of importance to the history, architecture or culture of an area by an appropriate local, state or federal government jurisdiction. This shall include designated buildings or properties on, or determined eligible for, official national, state or local historical registers or official inventories, such as the National Register of Historic Places, California Register of Historical Resources, State Historical Landmarks, State Points of Historical Interest, The Tuolumne County Register of Cultural Resources and other officially adopted city or county registers, inventories, or surveys of historical or architecturally significant sites, places or landmarks."

While inclusion of the building on an historic register will help if one of the ultimate goals is to preserve the building historically, and necessary to use the CHBC, inclusion on an historical register could also limit the amount of flexibility you have with changing and manipulating the building's interior to suit a particular need. Consultation with the State Architect and the State Office of Historic Preservation will be important. As noted previously, the CHBC is an important tool that can be used in the restoration of the Sonora Dome, when it has been determined what the best appropriate use for the structure will be.

Photo 8.1: Front entry from the north. Notice the window mounted air-conditioning unit in the lower window at the porch.

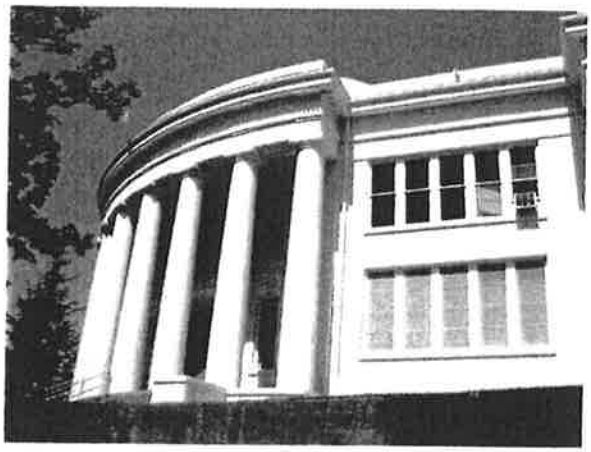


Photo 8.2: Southwest view of the building. Another window mounted air-conditioning unit.

Photo 8.3: Southside elevation. View shows the multiple levels of the building.

Occupancy Conditions Scenario No. 1

Basement

Classrooms		
3710 sq. ft. at 20 sq. ft./person	=	186 people

1st Floor

Classrooms		
1735 sq. ft. at 20 sq. ft./person	=	87 people
Office		
3530 sq. ft. at 100 sq. ft./person	=	36 people

2nd Floor

Auditorium		
2392 sq. ft. at 15 sq. ft./person	=	160 people
Classrooms		
3720 sq. ft. at 20 sq. ft./person	=	186 people
Total	=	**655 people**

Parking Requirements for Scenario #1

Classrooms		
9165 sq. ft. at 200 sq. ft./automobile	=	46 automobiles
Office		
3530 sq. ft. at 200 sq. ft./ automobile	=	18 automobiles
Auditorium		
160 people (occupant load divided by 4)	=	40 automobiles
Total	=	**104 automobiles**

Occupancy Conditions Scenario No. 2

Basement

Office
3710 sq. ft. at 100 sq. ft./person = 38 people

1st Floor

Classrooms
5265 sq. ft. at 20 sq. ft./person = 264 people

2nd Floor

Auditorium
2392 sq. ft. at 15 sq. ft./person = 160 people
Classrooms
3720 sq. ft. at 20 sq. ft./person = 186 people

Total = **648 people**

Parking Requirements for Scenario #2

Classrooms
8985 sq. ft. at 200 sq. ft./automobile = 45 automobiles

Office
3710 sq. ft. at 200 sq. ft./ automobile = 19 automobiles

Auditorium
160 people (occupant load divided by 4) = 40 automobiles

Total = **104 automobiles**

Occupancy Conditions Scenario No. 3

Basement

Office
3710 sq. ft. at 100 sq. ft./person = 38 people

1st Floor

Office
5265 sq. ft. at 100 sq. ft./person = 53 people

2nd Floor

Auditorium
2392 sq. ft. at 15 sq. ft./person = 160 people
Office
3720 sq. ft. at 100 sq. ft./person = 38 people

Total = **289 people**

Parking Requirements for Scenario No. 3

Office
12695 sq. ft. at 200 sq. ft./ automobile = 64 automobiles

Auditorium
160 people (occupant load divided by 4) = 40 automobiles

Total = **104 automobiles**

Demolition **$ 98,000.00**

Miscellaneous demolition including plaster ceilings for installing shear diaphragms, specific areas of flooring for structural strengthening and ties to the walls, walls as needed, HVAC system, plumbing, and electrical.

Structural Repairs **$ 190,000.00**

Concrete wall out of plane failures: epoxy bolts and steel angles should be used to anchor concrete walls.
Roof and floor diaphragm failure: The existing diagonal sheathing should be sheathed with new plywood to provide adequate seismic shear capacity.
Falling hazard of the dome ceiling: The existing plaster ceiling should be sheathed with new plywood to provide adequate seismic shear capacity.
Falling hazard of the entrance structure: The existing plaster ceiling should be sheathed with new plywood to provide adequate seismic shear capacity.
Foundation instability: the soil under the footings should be reinforced with reinforced concrete. (Shot Crete)

Plaster Ceiling and Wall Repair **$ 56,970.00**

Repair of ceilings removed for structural ties and diaphragms. Repair of walls that have water damage.

Window Repair **$ 32,750.00**

Dry rot damage, making the windows operable, weather stripping, etc.

Door Repair **$ 30,800.00**
Repair doors so that they operate correctly, weather strip exterior doors, new hardware with locking functions as necessary for the new room use, etc.

New Doors **$ 10,800.00**

Where necessary for exiting and for new room use. Includes new hardware as necessary for each new door.

Insulation **$ 21,000.00**

At the attic space and new walls only.

Roofing **$ 48,000.00**

Single-ply membrane roofing over the total roof surface. A new flat sheet metal roofing over the dome to replicate the original roofing and restore the historic look of the dome.

Flooring **$ 98,800.00**

Some of the original historic flooring can be restored, most of the rooms will need new flooring of wither carpet or resilient flooring.

Painting **$ 96,600.00**

Complete new paint for the interior and exterior of the building.

Elevator **$ 107,180.00**

Hydraulic elevator, 4 stops, located outside of the original building footprint. Cost includes the construction of the shaft and a roof over the shaft as well as the landings at each floor, and stairs and retaining wall at basement as indicated in the floor plan sketches of the building.

HVAC **$ 539,460.00**

Complete new heating, ventilating, and air conditioning system for each floor independent of each other. Independent systems will provide a more efficient system for the building. Also included within each floor will be a zoning system so that individual spaces could have control over their space separate from the other spaces.

Plumbing **$ 84,900.00**

New restrooms on each floor, Men's and Women's, as required to meet code for the new occupancy totals. This includes a total of 14 water closets, 7 lavatories, and 3 drinking fountains. The plumbing outside of the building has been assumed to be in good condition and large enough to accept the new restrooms without being modified. Also included is a preparation kitchen for the preparation, warming and serving of food for the auditorium uses. This kitchen would have the following equipment… sinks, dishwasher, refrigerator, cooktop with oven, and microwave oven, all of commercial quality. A grease trap has not been included.

Electrical **$ 255,744.00**

Upgrading the electrical per code and per the new requirements of the new building occupancy. As discussed in the report above the main electrical

service appears to be adequate for the new uses but will need to be modified for the room use and the new HVAC equipment.

Subtotal	$ 1,671,004.00
10% Contingency	$ 162,225.00
Subtotal	$ 1,838,104.00
Contractors General Conditions 8%	$ 147,048.00
Subtotal	$ 1,985,152.00
Contractors Overhead and Profit 15%	$ 297,773.00
Subtotal	$ 2,282,925.00
Insurance and Bonds 2%	$ 45,658.00
Total	**$ 2,328,583.00**

This estimate does not include any hazardous materials removal or management in place costs. The total budget estimate of $ 2,328,583.00 based upon the usable square footage shown in the building code check section of the report comes out at about $113 per square foot.

The following fees should also be budgeted for the Historic Sonora Dome Restoration project.

Architectural and Engineering Fees (Approximately 10% of the estimated construction cost)	$ 232,860.00
Building Permit Fees (3% of the estimated construction cost)	$ 69,960.00
Planning Department Fees (for Variances or Zoning Changes, etc., cannot be determined until a final Scope of Work is determined)	

Parking Garage

The parking garage will consist of three floors and a floor plate of about 39,680 square feet per floor. The total square footage of the garage would be 119,040 square feet. The building would hold approximately 108 cars per floor or about 324 cars total. This particular garage would take care of any immediate parking needs for the building and still have plenty of room to grow. The parking scenarios detailed in this report indicate that 104 cars would be needed to support the best uses of this building. The full potential of the site, including the surrounding property being used as an athletics field or an outdoor amphitheater, etc., could easily produce many more cars than what would be required for the building alone.

The parking garage construction utilized for this budget estimate is as follows:

A steel frame structure
Precast concrete wall panels
Concrete slab floor decks on a metal pan system
Concrete stairs set in a metal pan (2 stairways)
Elevator (one)
Complete fire sprinkler system
Complete fire alarm system

This system as described will cost approximately $45/sq.ft. or **$ 5,356,800.00**

If the soccer field were the location for the parking garage as described in the body of the report, then an access road would be required to get to the parking garage site. A complete civil engineering study of the site would be needed to determine an accurate cost and feasibility of this road. What follows below is only an estimate of what that road might cost. Landscaping costs are unknown at this time.

Roadwork

Excavating and preparation of the road bed site	$ 7,500.00
Retaining wall to retain one side of the road bed only	$ 28,000.00
Guardrail (on top of the retaining wall)	$ 45,000.00
Roadway (3"asphaltic concrete on 8" base on 10"subbase)	$ 600,000.00
Total	**$1,560,500.00**

This estimate is based on non-prevailing wage rates in the year 2002. It should be adjusted accordingly if prevailing wage rates are required and for inflation to the year which construction is anticipated.

The following fees should also be budgeted for a parking structure and road.

Architectural and Engineering Fees (Approximately 10% of the estimated construction cost)	$ 691,730.00
Building Permit Fees (3% of the estimated construction cost)	$ 207,519.00
Planning Department Fees (for Variances or Zoning Changes, etc., cannot be determined until a final Scope of Work is determined)	

Parking Lot

If a ground level parking lot were to be constructed on the site of the existing portable school buildings it could be approximately 38,280 sq. ft. and park about 140 cars. Again, this would be slightly more cars than required by the building use alone.

Clearing and site preparation	$ 46,000.00
Roadway (2" asphaltic concrete on 6"base)	$ 230,000.00
Lighting	$ 95,700.00
Landscaping (irrigation, ground cover, trees, and bark)	$ 52,400.00
Total	**$ 424,100.00**

If the parking garage were located where the existing portable school buildings are currently located the roadwork required to get into the garage would probably not be necessary. Although this should also be investigated within the civil engineering study, if this was the concept to be further studied. Relocation of the existing portables, utility disconnections, and hazardous materials removal have not been included in the estimate above. This estimate is based on non-prevailing wage rates in the year 2002. It should be adjusted accordingly if prevailing wage rates are required and for inflation to the year which construction is anticipated.

The following fees should also be budgeted for a ground level parking garage.

Architectural and Engineering Fees (Approximately 10% of the estimated construction cost)	$ 42,410.00

Building Permit Fees (3% of the estimated construction cost)	$ 12,723.00
Planning Department Fees (for Variances or Zoning Changes, etc., cannot be determined until a final Scope of Work is determined)	

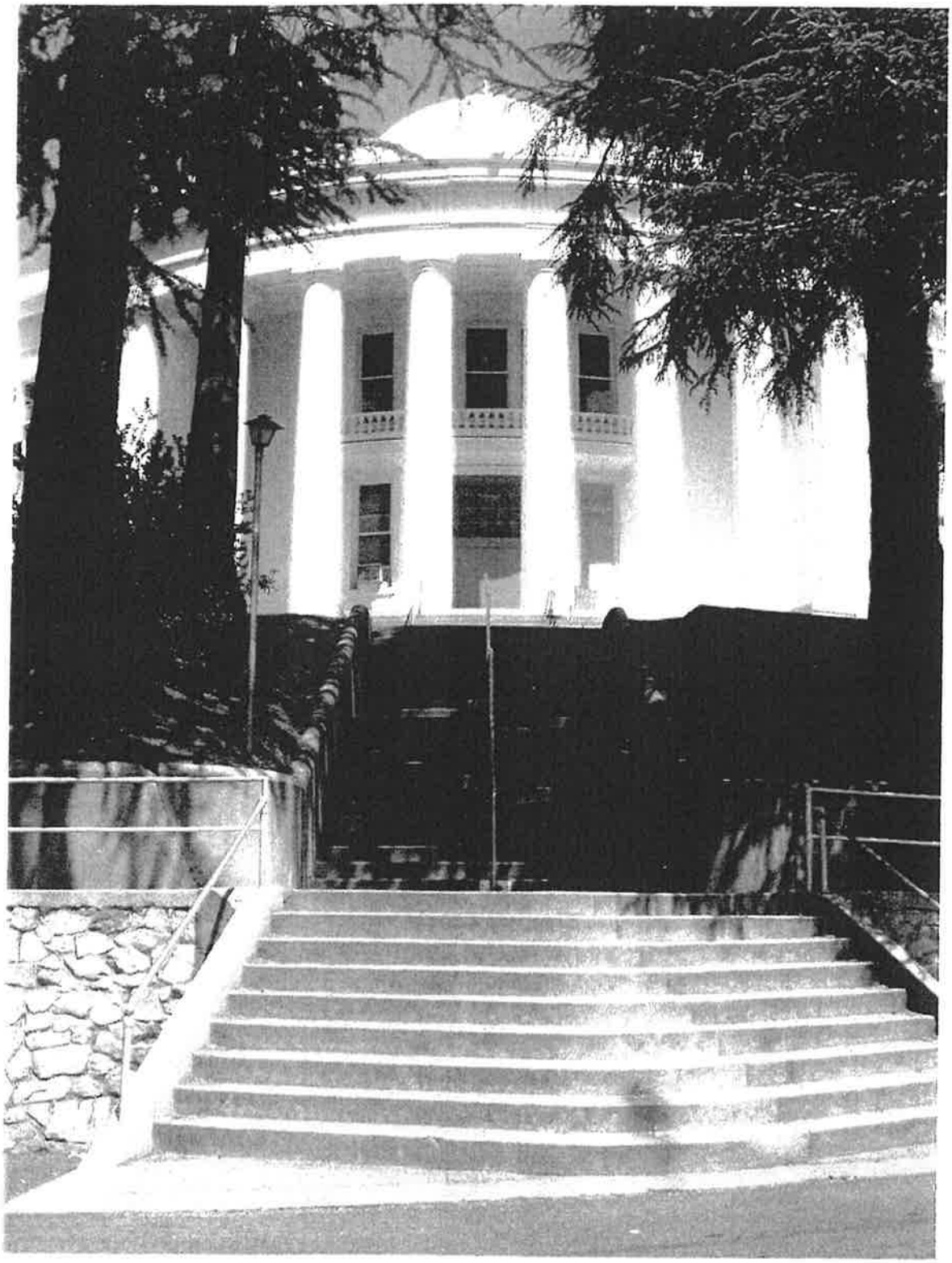


Photo 9.1: Front Entry view from South Barretta looking up the stairway from the bottom of the hill.