

CAPITOL COMPLEX MASTER PLAN

FINDINGS & RECOMMENDATIONS (F & R) NEEDS ASSESSMENT

STATE CAPITOL BUILDING, 200 EAST COLFAX AVENUE (DENVER)

NOVEMBER 2014



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FINDINGS & RECOMMENDATIONS (F&R) NEEDS ASSESSMENT

STATE CAPITOL BUILDING
200 EAST COLFAX AVENUE (DENVER)

November 2014

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EXECUTIVE SUMMARY

The purpose of this report is to provide a Findings & Recommendations (F&R) Needs Assessment of the State Capitol Building at 200 East Colfax Avenue in Denver, Colorado. The report includes a description and evaluation of the existing conditions, recommendations, and cost estimates for the recommended work from the following focus areas: architecture (RNL), structural (Martin/Martin Consulting Engineers), civil (Martin/Martin Consulting Engineers), mechanical/electrical/plumbing (RMH Group), voice and data (Shen Milsom Wilke), security (Shen Milsom Wilke), historical (Anderson Hallas Architects), and cost estimating (CBRE, Inc.). The project team, led by RNL, reviewed existing building documentation, drawings, and audit reports provided by the Owner, and conducted a site visit to identify and document the observable existing conditions of the building and its code and life safety issues.

The State Capitol Building is a significant contributing building in the Denver Civic Center District which was added to the U.S. Register of National Historic Places on February 27, 1974. The building is an important part of the architectural history of both the City of Denver and the State of Colorado. All work on the property should follow the Secretary of the Interior's Standards for the Treatment of Historic Properties and the National Park Service (NPS) Preservation Briefs. In general the building is in fair condition. A fair condition rating refers to the fact that the State Capitol Building is usable but in serious need of repairs to address life safety and loss of use/reliability issues.

Although all recommendations presented in this report should be considered for implementation, the following are the top five priorities due to their impact on life safety (LS), loss of use/reliability (LOU), finishes (F), and overall energy efficiency:

1. Replace roof. This recommendation encompasses loss of use/reliability issues and is due to the age and condition of the roof.

High Level Cost Estimate: \$2,873,728

2. Repair short tunnel roof/structural. This recommendation encompasses life safety issues and is due to the age and general deterioration of the tunnel over the past 115+ years, ongoing maintenance efforts, and the potential hazard to motorists passing overhead.

High Level Cost Estimate: \$11,764,925



3. Windows and facade restoration/repair. This recommendation encompasses loss of use/reliability and overall energy efficiency issues and is due to the age and condition of the windows and facade.

High Level Cost Estimate: \$10,467,816

4. Plumbing system repair/replacement. This recommendation encompasses loss of use/reliability issues and is due to the age and condition of the plumbing as well as ongoing maintenance efforts.

High Level Cost Estimate: \$6,190,182

5. Site repair: sidewalk, paving, and drainage. This recommendation encompasses life safety and loss of use/reliability issues and is due to the overall deterioration of the site pavement which is creating a potential tripping hazard.

High Level Cost Estimate: \$1,267,662

If all recommendations in this report are implemented as a single project, including the top 5 priorities, the high level cost estimate is:

\$60,328,458

If all recommendations in this report are implemented system by system as multiple projects, including the top 5 priorities (systems), the high level cost estimate is:

\$61,845,759





1.0 OVERVIEW

1.0-A ARCHITECTURE OVERVIEW

The State Capitol Building was constructed from 1886 to 1903 and was considered complete with the gilding of the dome in gold in 1908. The State Capitol serves as the beginning of Denver's Capitol Hill Neighborhood and is located on the southeast corner of Lincoln Street and East Colfax Avenue. The cruciform building with its colonnaded dome was originally designed by Elijah E. Meyers who stated that "The building is of the Corinthian order of classic architectural style admirably adapted to public buildings of the like character and magnitude." Frank E. Edbrooke became the Supervising Architect following the firing of Meyers from the project in the spring of 1889. The State Capitol Building is a Renaissance Revival style statehouse located in the center of downtown Denver and is a significant part of the Denver Civic Center District which was added to the U.S. Register of National Historic Places on February 27, 1974.

The building has a long history of renovations and improvements since its construction including the current State Capitol Dome Restoration with a projected completion in the spring of 2014. Another recent improvement project involved a major life-safety upgrade, including enclosed stair towers that began in 2001 and was completed in 2009. The State Capitol was constructed using a variety of materials including wrought iron, cast iron, wood, masonry, and stone. Grey granite from Gunnison County, Colorado clads the exterior of the building. This three-story building, with a basement and sub-basement, grosses 323,813 square feet of space.

The architectural assessment of the State Capitol Building at 200 East Colfax Avenue included reviews of the existing building documentation, drawings, and audit reports provided by the Owner, and a site visit to survey and document the existing conditions of the building and its code and life safety issues. During the site survey on October 15, 2013, building maintenance personnel provided building history and information on the layout, finishes, maintenance routines, systems, and the dates of repairs and upgrades. In general, the building is in fair condition, considering its age. There are issues related to interior and exterior finish materials, building systems, code compliance, accessibility, asbestos, and other items that require attention in the near term. One of the main concerns is related to the age and condition of the roof. Other concerns are related to the need for a restoration of the windows and facade. These concerns encompass loss of use/reliability and overall energy efficiency issues. These findings, along with recommendations for repairs, are detailed in the body of this report.



Note: As an historic property, the State Capitol Building and surrounding grounds should comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and the National Park Service (NPS) Preservation Briefs.

State Capitol Tunnel System

It was reported that the State Capitol utility tunnel system connects the basements and sub-basements of the State Capitol Building with the Legislative Services Building to the south and with the State Office Building to the north and currently contains steam, electric, gas, water, and other utilities. It was further reported that the State of Colorado is considering giving pedestrian access through the tunnels to State legislators and their staff. There is an assessment that was recently completed by C-West Code Consultants, Inc. for the State of Colorado titled "Tunnel Access: Legislative Services Building To State Capitol To State Services Building, Preliminary Evaluation of Change of Use." There is also a letter from the Denver Fire Department, dated April 17, 2012, outlining Fire Code and Life Safety concerns related to the proposed use of the underground utility tunnels as a means of egress for State legislators and their staff. Finally, there is a cost estimate, dated April 9, 2012, for upgrading the existing tunnels and for adding separate pedestrian tunnels completed by GH Phipps Construction Companies. These documents can be found in the "Referral Documents" section of the Master Plan.





1.0-B STRUCTURAL OVERVIEW

Martin/Martin conducted a building condition assessment on October 15, 2013 of the Colorado State Capitol located at 200 East Colfax Avenue in Denver, Colorado. The purpose of our condition assessment was to identify structural defects, damage and deterioration.

The building was constructed between 1884 and 1908. The structural framing consists of a variety of materials. The dome was constructed with wrought iron framing and cementitious plaster while the main roof was constructed with wood planks and joists supported by wrought iron beams and trusses. Beams and trusses were supported by masonry walls, cast iron columns and stone pedestals. The ceiling of the tunnels and the floor framing members in the building were constructed using arched masonry arched between wrought iron beams.

The structural framing that was readily observable is in good condition. Several cracks were observed in the walls and ceilings throughout the 3rd floor. The cracks typically propagate from corners and doorways and are likely caused by normal settling and movement of the structure as well as renovations over the life of the building. The cracks do not present a cause for structural concern at this time.

Water intrusion was observed at a portion of the south tunnel and vault ceiling and has caused corrosion on some of the structural framing and paint to peel off the brick masonry. The tunnel should be waterproofed from above to prevent further water infiltration and the tunnel should be replaced with new concrete framing and a waterproofing membrane applied.



1.0-C CIVIL OVERVIEW

The State Capitol building site is located at the southeast corner of Colfax Avenue and Lincoln Street with an address of 200 East Colfax Avenue. The building is bordered by Civic Center Park to the west, state office buildings and mixed restaurant and retail to the north, retail and office development to the east, and state office buildings and a church to the south. The State Capitol Building site is approximately 3.5 acres. The existing site consists of the building, parking, landscaping and street right-of-way including sidewalk and landscaping. The main building entrance is accessed from Lincoln Street to the west. There are additional entrances on the north, east and south sides of the building. The condition of the site surrounding the building is consistent with a building approximately 115+ years old.

The site exterior is generally in good condition. The site appears to be maintained regularly, with improvements to the exterior conducted in recent years. The main concern regarding the State Capitol Building is the condition of the pavement around the hardscape circle surrounding the building. There are numerous locations around the building with broken and cracked asphalt. Broken surfaces in walking paths is a tripping hazard and a high safety concern. Additionally, drainage is a concern here. This area would benefit by a demolition of all surfaces, completion of detailed grading to re-establish proper drainage patterns and an application of new pavement to protect the existing site and prevent flooding, icing or pedestrian tripping. While the existing building functions in its current state, improvements can be made to further maintain the existing site for posterity and improve aesthetics.





1.0-D MECHANICAL, ELECTRICAL, AND PLUMBING OVERVIEW

The Capitol building has been updated and upgraded through the years since it was first constructed in the 1890's. The electrical and mechanical assessment of the Capitol building included review of the existing building documentation, drawings, and audit reports provided by the Owner. A site survey for the facility was performed to observe the existing electrical and mechanical equipment installation and assess code and building energy efficiency issues. During the site survey, information about the building history and on the electrical and mechanical systems conditions, maintenance routines, and installation dates.

The main concerns with the Capitol building are the steam lines, plumbing isolation valves, and the LED lighting upgrades. The plumbing system is old and need replacement.

The building is in partial compliance with current life safety codes. It is recommended to add life safety features as smoke exhaust system for the main atrium. Excessive amount of combustible material is stored in certain rooms. This is a fire hazard as sprinkler system is not designed to handle this load. It is recommended to remove such material from the building.

Energy Conservation

To conserve energy in this building a lighting control system that provides automatic daylight dimming and occupancy sensor shutoff will provide energy savings. Also, following the most up-to-date energy codes regarding how much light is used (watts per square feet) will reduce the number of fixtures required for each space. Supplemental task lighting can be used on the desk or in the cubicles to ensure occupants are able to perform their work effectively.

Since only forty percent of building is conditioned with ground source heat pumps it is recommended to provide heat pumps for rest of the building. This will save operating energy costs. Balancing the airflows in the chambers and other rooms will improve the comfort conditions and also save energy since only the required amount of air will be delivered to the space. Other recommendations like providing energy efficient motors, air flow balancing etc. will also help in energy savings.





1.0-E VOICE AND DATA OVERVIEW

The Voice and Data IT/Telecommunications Infrastructure assessment report provides recommendations for the design and construction of the IT/Telecommunications Infrastructure required to support Voice/Data and other technology systems within the State Capitol building for renovation projects. It has been found that much of the building's existing IT/Telecommunications infrastructure is not consistent with current industry standards and best practice installation methods. The current IT infrastructure may not properly support many newer technology IP devices which are now considered to be standard in the industry such as VoIP phones and PoE type security cameras. The existing wireless network bandwidth is being overtaxed due to the lack of hard wired network connectivity throughout many areas of the Capitol, and may not be able to properly support expectations for wireless access. Network switches are not uplinked with fiber optic cabling backbone in all cases, as would be considered industry standard design criteria. Existing network cabling may have bandwidth limitations as compared to that of more robust, industry standard Cat6 or Cat6A cable plant specifications. It should be noted where referenced, that IT systems infrastructure not only includes the cabling, but the cabling pathways and the spaces (or rooms) that support the network cabling. Technology spaces requiring to be properly outfitted in the building may include the Main Distribution Facility (MDF) room, and distributed IDF rooms (minimum of one per floor). Backbone infrastructure shall include proper cabling pathways between MDF/IDF rooms, in order to support installation of both fiber and copper backbone cabling. Singlemode and laser optimized multimode fiber optic cables, along with Category 3 copper backbone cables should be installed from the MDF room to each IDF room to support the technology systems. Hardwired network connectivity should be provided for users, and distributed appropriately throughout all areas of the facility. Category 6, at minimum, UTP cable shall be installed from the telecom outlets and IP field devices to termination hardware in the IDF rooms using conduit and/or cable tray horizontal pathways. A proper grounding and bonding system must be provisioned for, and will provide a uniform ground within the telecommunications rooms, to ensure safe and reliable operation of the communications and low-voltage equipment and systems. These recommendations may be used for IT/Telecom Infrastructure program development, space planning, and budgeting of these systems at a conceptual design level. Industry standard and best practice design methodology shall be applied, including BICSI and TIA/EIA design and construction guidelines. For telecommunications infrastructure renovation projects within the facility, any applicable Colorado State Legislative Branch or Governor's Office of Information Technology (OIT) design criteria





documents should be complied with.

The following list prioritizes voice/data infrastructure upgrades required:

1. Necessary: Retrofit facility with proper MDF/IDF room distribution, which meets industry standard for telecommunication structured cabling system.
2. Necessary: Replace horizontal copper station cabling with Cat 6 network cabling.
3. Necessary: Replace vertical and network backbone cabling with appropriate copper and fiber optic cabling.
4. Necessary: Provide voice/data infrastructure to support wireless access points (WAPs), for wireless network coverage throughout facility.





1.0-F SECURITY SYSTEMS OVERVIEW

The security systems design guidelines outline electronic security systems infrastructure which will enhance security operations and provide a safe and secure environment for persons and assets within the State Capitol Building. The security systems should be planned and designed to allow the security personnel the operational flexibility to provide various levels of security based on the threat level at a given time. Security systems should be designed such that they may be monitored remotely from centralized security monitoring locations. Best practice security design methodology should be applied, including crime prevention through environmental design (CPTED), layered security, integrated design, and concentric circles of protection. Additionally it is recommended that the following document be used a guideline for developing specific security design criteria for renovations: ASIS Facilities Physical Security Measures, IESNA G-1-03 Guideline for Security Lighting, Unified Facilities Criteria UFC 4-010-01.

For renovation projects, applicable State construction standards and design guidelines must be followed. Electronic security systems to be considered for implementation or upgrade include access control, intrusion detection, duress alarm, intercom, video surveillance, and emergency call system. The access control system (ACS) will be an expansion of the existing campus wide system currently installed throughout other State buildings. The ACS shall also serve as the primary security management system for monitoring intrusion alarms. The video surveillance system (VSS) should be comprised of IP digital cameras integrated with the existing VSS. The State's existing wireless duress alarm system infrastructure should be expanded where needed to support new locations of wireless duress buttons.

Existing security systems in State facilities are generally controlled and monitored centrally from Colorado State Patrol's Central Command Center (CCC), located in Denver CO.

Within the building, new head-end security control equipment is to be located in IDF or technology rooms, as coordinated with State IT technical staff. Equipment may include ACS control panels, power supplies, duress alarm panels, network video recorders, and UPS units.

All critical electronic security equipment should be backed-up with emergency power circuits or UPS units. State security personnel and other authorized staff may remotely monitor access control events, system alarms, and security video through network connected client workstations.





For the State Capitol Building renovation work, requirements for security device additions/upgrades and specific security system functionality are to be coordinated with State security personnel during design and construction phases.

The following list prioritizes security system upgrades required:

1. Necessary: Replace/Repair existing Hirsch Access Control card readers.
2. Necessary: Replace analog security cameras with IP PoE minimum 1.2MP cameras.
3. Necessary: Replace existing coaxial CCTV cabling with CAT 6 network cabling, required to support item 1 & 2 above.
4. Necessary: Verify functionality of access control devices and perimeter door alarms, replace if defective. Provide door sensor alarm on all perimeter doors.
5. Necessary: Verify functionality of wireless duress alarms. Provide duress alarms for all public interface counters and cash handling areas.
6. Recommended: Install IP security camera within main entrance/lobby.
7. Recommended: Install intercom station at facility main entrance door exterior. Must be intercom-over-IP (VoIP) based PoE intercom stations. Install IP camera to view intercom.

Consideration should be given in regards to the Installation and mounting details for any security related renovations. Due to the uniqueness of the buildings under consideration, design plans must be cognizant of maintaining the historical attributes of the buildings.



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2.0 OVERALL BUILDING ASSESSMENT FINDINGS AND RECOMMENDATIONS

2.1 ARCHITECTURE

2.1-A EXTERIOR BUILDING ENVELOPE/SITE

General

The State Capitol Building is a three-story tall building, with a full basement and sub-basement, constructed using a variety of materials including wrought iron, cast iron, wood, masonry, and stone. Grey granite from Gunnison County, Colorado clads the exterior of the building. The central dome rising above the building is gilded with gold leaf and is divided into sixteen segments, each containing a flat arch window. The building is cruciform in plan with monumental porticos on projecting pavilions on each facade. The central projecting pavilions are accessed by monumental granite stairs with brass railings and lead to sets of entrance doors with circular transoms covered by metal grilles. The granite sidewalls flanking the stairs hold historic globed lampposts. The main building entrance serves the public from Colfax Avenue on the north side of the building at the First Floor. There is an accessible entrance available to the public from 14th Avenue on the south side of the building at the Basement Floor. There are additional emergency exits that exist from the First Floor and the Basement Floor. Site paving and pathways around all four sides of the building lead to sidewalks that extend around the perimeter of the site adjacent to the surrounding roadways. The main roof was originally constructed with slate roofing and it was reported that it was replaced in the early 1950's with a combination of glazed clay tile and composition asphalt shingles. The composition asphalt shingles are further reported to have been replaced at least once around 1980. It was reported that a photovoltaic installation was recently placed on the roof as part of the State's commitment to sustainable design planning at the Capitol.

The building envelope is in fair condition overall. Various elements are showing the effects of deferred maintenance, others are simply damaged or worn out.

It was reported that asbestos and lead paint are present throughout the building. It was further reported that the interior of the roof deck is sprayed



with an asbestos-containing layer. All asbestos within the building should be abated and all personnel should be removed from affected areas during abatement. Sampling for lead paint must be completed prior to sanding any surfaces to be painted.

Note: As an historic property, the State Capitol Building and surrounding grounds should comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and the National Park Service (NPS) Preservation Briefs.

State Capitol Tunnel System

It was reported that the State Capitol utility tunnel system connects the basements and sub-basements of the State Capitol Building with the Legislative Services Building to the south and with the State Office Building to the north and currently contains steam, electric, gas, water, and other utilities. It was reported that these tunnels were originally used to transport coal and have had numerous waterproofing issues. Corrosion and water damage were widely observed throughout the areas of the tunnels included in the site survey visit. It was also reported that there is known damage to the tunnels and it is believed they were not originally built to support the weight of the traffic that now exists overhead. It was reported that the south end of the Long Tunnel has issues with the Xcel Energy steam lines and with the walls and ceilings. Signage was noted during the site survey visit warning that asbestos is known to be present throughout the Long Tunnel. It was also reported that the State of Colorado is considering giving pedestrian access through the tunnels to State legislators and their staff. There is an assessment that was recently completed by C-West Code Consultants, Inc. for the State of Colorado titled "Tunnel Access: Legislative Services Building To State Capitol To State Services Building, Preliminary Evaluation of Change of Use." There is also a letter from the Denver Fire Department, dated April 17, 2012, outlining Fire Code and Life Safety concerns related to the proposed use of the underground utility tunnels as a means of egress for State legislators and their staff. Finally, there is cost estimate, dated April 9, 2012, for upgrading the existing tunnels and for adding separate pedestrian tunnels completed by GH Phipps Construction Companies.

It was reported that replacement of the Short Tunnel roof, an infrastructure assessment of the tunnels, and repair of the tunnels are on the Capitol Complex list of controlled maintenance projects that need to be addressed.



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Front/West Elevation of the State Capitol



North Elevation of the State Capitol



East Elevation of the State Capitol





South Elevation of the
State Capitol

Cladding

The readily observable portions of the granite panels around the building and from the scaffolding on the south end of the east side of the building appear to be in fair condition overall. Minor spalling of the granite was noted in a small number of locations (see Fig. 2.1.A.1). Deterioration and soiling was noted along the top of the readily observable sections of the window ledges around the building (see Fig. 2.1.A.2 and Fig. 2.1.A.3). There are low-profile, triangular strips of stone, or masonry, applied along the outer edge of the ledges that are generally deteriorating or missing entirely (see Fig. 2.1.A.2 and Fig. 2.1.A.3). These strips may be causing water to pool at these locations instead of draining away.

The panels are generally soiled, which is to be expected after 120+ years (see Fig. 2.1.A.4 and Fig. 2.1.A.5). Soiling was noted especially in and around the second-story porches above the monumental entrance porticos (see Fig. 2.1.A.6, Fig. 2.1.A.7 and Fig. 2.1.A.8). Some of the soiling appears to be due to the buildup of bird droppings and dirt, especially along the exposed top edges of the granite, including the window ledges, around the exterior of the building (see Fig. 2.1.A.9). Bird droppings are acidic and can damage the stone facades, aside from causing staining and soiling of the stone. There did not appear to be a bird deterrent system installed around the building.

There is a black rubber-like material that was applied to areas along the



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



exposed top edges of the granite that appears to be deteriorating (see Fig. 2.1.A.10).

It was observed around the exterior of the building that the sealant and mortar is widely deteriorating, or missing entirely, from the joints between the stone panels, creating access points by which water can penetrate the building envelope (see Fig. 2.1.A.11, Fig. 2.1.A.12, Fig. 2.1.A.13, and Fig. 2.1.A.14).

It was reported that restoration/repair of the facade is on the Capitol Complex list of controlled maintenance projects that need to be addressed. The Owner provided a comprehensive roof, facade, and site restoration assessment that was recently completed in 2012 by Martin/Martin Consulting Engineers and Quinn Evans Architects. It was reported that this assessment, dated August 20, 2012, is being applied by the Owner for the conditions assessment, recommendations, and cost estimates for a planned facade rehabilitation of the State Capitol Building. However, we noted that the mortar and sealant between the joints of the stone is in worse condition than reported in the assessment dated August 20, 2012 and needs to be addressed as soon as possible. We noted that test-cleaning of small portions of the granite panels has started on the east side of the building near the scaffolding on the south end (see Fig. 2.1.A.15).



Fig. 2.1.A.1 Minor spalling of the granite observed in a few locations around the exterior of the building.





Fig. 2.1.A.2 General soiling and deterioration noted along the top edges of the readily observable sections of the granite ledges.



Fig. 2.1.A.3 General soiling and deterioration noted along the top edges of the readily observable sections of the granite ledges.



Fig. 2.1.A.4 Generally soiled granite panels noted around the exterior of the building.



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Fig. 2.1.A.5 Generally soiled granite panels noted around the exterior of the building.



Fig. 2.1.A.6 Soiling noted around the second-story porticos above the monumental entrance porticos.



Fig. 2.1.A.7 Evidence of water damage noted at a second-story porch above a monumental entrance portico.





Fig. 2.1.A.8 Evidence of water damage, with spalling of the granite, noted at a readily observable second-story porch above a monumental entrance portico.



Fig. 2.1.A.9 Soiling caused by the build-up of bird droppings and dirt along the exposed top edges of the granite.



Fig. 2.1.A.10 A black rubber-like material that was applied to areas along the exposed top edges of the granite is deteriorating.

2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 2.1.A.11 Widespread deterioration of the material between the joints of the granite panels.



Fig. 2.1.A.12 Widespread deterioration of the material between the joints of the granite panels.



Fig. 2.1.A.13 Widespread deterioration of the material between the joints of the granite panels.





Fig. 2.1.A.14 Widespread deterioration of the material between the joints of the granite panels.



Fig. 2.1.A.15 Test-cleaning of the granite panels was observed to have started on the south end of the east side of the building.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Continue with the plan to rehabilitate the facade and with the plan to clean soiled/stained granite panels around the exterior of the building,



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



including at the roof level, using the approved cleaning method per the tested areas on the east side of the building.

- Repair or replace cracked or spalling granite panels around the building exterior, paying particular attention to the second-story porches above the monumental entrance porticos.
- Further investigate the historic purpose of the low-profile, triangular strips of stone, or masonry, observed along the outer edge of the granite ledges around the building. It appears that the strips are causing water to pool in these areas. Repair or replace as necessary, or investigate new systems in order to potentially install a more effective system.
- Examine granite panels for any deterioration behind the stone due to potential water penetration from missing and deteriorated material between the joints, and repair as required.
- Remove existing sealant around granite panels and replace with new sealant. Any new sealant, backup materials, and preformed joint fillers should be nonstaining. Petroleum-based organic adhesives should be avoided as they may stain the stone.
- Tuck point areas of missing or deteriorating mortar in the joints between granite panels.
- Install a bird deterrent system per recommendations for systems appropriate for use on historic buildings.
- Determine the extent of damage to the underground tunnels. Repair the damage to the tunnels, including any damage found upon further examination. Verify structural capacity and provide reinforcement to support the weight of traffic overhead. Provide waterproofing as necessary.

Glazing Systems and Doors

The windows are double hung, with a single pane over a single pane, with wood frames. It was reported that the windows located around the Capitol Dome are being restored as part of the overall dome restoration project. The windows that were readily observable during the site survey visit were widely noted to have paint in generally poor condition with fading and peeling



typical (see Fig. 2.1.A.16, Fig. 2.1.A.17 and Fig. 2.1.A.18). The peeling has progressed to the point that the wood is exposed in spots. It was also noted that metal reinforcement appears to have been added on either side of some of the window's meeting rails. There was evidence of water damage observed from the interior side of some of the windows (see Fig. 2.1.A.19 and Fig. 2.1.A.20).

Given the condition of the windows and the condition of the sealant observed in other areas around the building, a close examination of the sealant and weatherproofing around the windows is recommended

The historic doors around the exterior of the building appear to be in fair condition overall with some fading of the finish noted on the wood doors. It was also noted that there are generally air gaps between the door slabs on the interior side of the First Floor entry vestibules (see Fig. 2.1.A.21). These gaps allow air leakage and thermal transfer that the vestibule areas are meant to prevent.

It was reported that restoration/repair of the windows is on the Capitol Complex list of controlled maintenance projects that need to be addressed. It was also reported that the aforementioned assessment, dated August 20, 2012, is being applied by the Owner for the conditions assessment, recommendations, and cost estimates for a planned rehabilitation of the windows and doors around the exterior of the State Capitol Building.



Fig. 2.1.A.16 Generally faded and peeling paint observed at the wood window frames.



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 2.1.A.17 General deterioration noted at the readily observable windows around the exterior of the building.



Fig. 2.1.A.18 Generally faded and peeling paint observed at the wood window frames.



Fig. 2.1.A.19 Evidence of water damage viewed from the interior side of a window.





Fig. 2.1.A.20 Evidence of water damage viewed from the interior side of a window.



Fig. 2.1.A.21 Interior doors at the entrance vestibules were generally noted to have air gaps between the door slabs.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- With the exception of the Capitol Dome, continue with the plan to rehabilitate the exterior facade, including the windows and doors.
- Install an astragal weatherstripping system between the doors on the interior side of all entrance vestibules to prevent air leakage and energy loss.





Roof

It was reported that the original roof was constructed with slate roofing and that the roof has been replaced a number of times over the years. The roof currently consists of areas with clay tiles, reportedly installed in the early 1950's, and areas with residential grade asphalt shingles. The clay tiles are reportedly beginning to show signs of deterioration with spots that are chipping and cracking and a few tiles noted that are missing entirely. The mortar, especially along the hip cover tiles, is also reportedly beginning to deteriorate, leaving areas open to water penetration. It was reported that the shingles were installed approximately 15 years ago. The shingles are now beyond their expected serviceable life. It was reported that areas around the roof are developing leaks and signs of water damage were observed in multiple locations throughout the Attic (see Fig. 2.1.A.22 and Fig. 2.1.A.23). It was reported that the roof deck layer is sprayed with an asbestos-containing layer. It was also reported that replacement of the roof is on the Capitol Complex list of controlled maintenance projects that need to be addressed.

The roof was not accessible at the time of the site survey visit due to the ongoing Capitol Dome Restoration Project. It was reported that the aforementioned assessment, dated August 20, 2012, is being applied by the Owner for the conditions assessment, recommendations, and cost estimates for a planned roof rehabilitation of the State Capitol Building. It was also reported that the roof replacement project is scheduled to begin the summer of 2014.



Fig. 2.1.A.22 Signs of water damage observed at the roof throughout the Attic.





Fig. 2.1.A.23 Signs of water damage observed at the roof throughout the Attic.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Thoroughly test the roofing system for asbestos. Abate all asbestos at the roof prior to replacement of the roofing system.
- With the exception of the Capitol Dome, continue with the plan to replace the existing roofing with a new roofing system.

Site Elements

It was reported that the north, south, and west entrance stairs are on the Capitol Complex list of controlled maintenance projects that need to be addressed.

It was reported that the aforementioned assessment, dated August 20, 2012, is being applied by the Owner for the conditions assessment, recommendations, and cost estimates for a planned rehabilitation of the site surrounding the State Capitol Building.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Continue with the plan to restore and rehabilitate the site surrounding the State Capitol.



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



2.1-B CODE ISSUES

Applicable Codes

The following approved building codes and standards adopted by State Buildings Programs (SBP) and other state agencies are identified as the minimum requirements to be applied to all state-owned buildings and physical facilities including capitol construction and controlled maintenance construction projects, as revised 7/2013.

The 2012 edition of the International Building Code (IBC)

(as adopted by the Colorado State Buildings Program as follows: Chapter 1 as amended, Chapters 2-35 and Appendices C and I)

The 2012 edition of the International Energy Conservation Code (IECC)

(as adopted by the Colorado State Buildings Program)

The National Fire Protection Association Standards (NFPA)

(as adopted by the Department of Public Safety/Division of Fire Safety as follows with editions shown in parentheses: NFPA-1 (2006), 11 (2005), 12 (2005), 12A (2004), 13 (2002), 13D (2002), 13R (2002), 14 (2003), 15 (2001), 16 (2003), 17 (2002), 17A (2002), 20 (2003), 22 (2003), 24 (2002), 25 (2002), 72 (2002), 409 (2004), 423 (2004), 750 (2003), and 2001 (2004))

The 2007 edition of ASME A17.1 Safety Code for Elevators and Escalators

(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

The 2005 edition of ASME A17.3 Safety Code for Existing Elevators and Escalators

(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)



The 2003 edition of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities

(as adopted by the Colorado General Assembly as follows: CRS 9-5-101, as amended, for accessible housing)

Note: It is anticipated that compliance with the federal Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) and Colorado Revised Statutes Section 9-5-101 will be met by compliance with the 2012 International Building Code and ICC/ANSI A117.1. However, each project may have unique aspects that may require individual attention to these legislated mandates.

Building Construction Type

The building is 3 stories tall, with an attic, basement, and sub-basement, and has a total floor area of 323,813 square feet. If this building was built today, portions of the building would be classified as Occupancy Group B (primary use as a Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts). Other portions of the building would be classified as Occupancy Group A-3 (primary use as an Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic functions). According to Table 503 of the IBC (2012), the building would be classified as Construction Type IB, which allows for 11 stories and 160 feet in height, and unlimited floor area. Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the value specified in Table 503 for maximum height is increased by 20 feet and the maximum number of stories is increased by one.

There are portions of the Attic Floor being used for the storage of various decorations. There are also portions of the Sub-basement Floor being used for the storage of worn or damaged building finish materials such as oak doors and trim (see Fig. 2.1.B.1) and various stone panels. The storage of the combustible materials is likely occurring within spaces that have not been rated or equipped for the storage of such materials per required fire protection codes. It is recommended that all storage of combustible materials throughout the building be further investigated as soon as possible to determine the proper course of action.



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Note: As an historic property, the State Capitol Building and surrounding grounds should comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and the National Park Service (NPS) Preservation Briefs.



Fig. 2.1.B.1 Storage of worn and damaged oak doors and trim observed in the sub-basement.

Egress Issues

Alterations, repairs, additions, and changes of occupancy to, or relocation of, existing buildings and structures shall comply with the current provisions for alterations, repairs, additions and changes of occupancy or relocation. As an existing building, the State Capitol Building is exempt from current code requirements for new construction as long as minimal renovation is done. If the building undergoes extensive renovation, the following issues may need to be addressed per current code requirements, unless historic designation guidelines take precedence.

According to Section 1028.8 of the IBC (2012), the common path of egress travel shall not exceed 30 feet in an A-type occupancy. According to Table 1014.3 of the IBC (2012), the common path of egress travel for a building with an approved sprinkler system in a B-type occupancy is 100 feet with an occupant load greater than 30. The plans provided by the Owner appear to indicate that there are issues with the length of the common paths of egress travel in a number of locations. There is a common path of egress travel approximately 120 feet in length from the east side of the Third Floor, for example, which does not comply with code requirements. The length of



the longest common path of egress travel and the occupancy loads of each floor should be verified as part of any future renovation plans.

According to Table 1016.2 of the IBC (2012), the exit access travel distance in an A-type occupancy with a sprinkler system is 250 feet and the exit access travel distance in a B-type occupancy with a sprinkler system is 300 feet. The approximate greatest distance of travel that exists from the most remote point on any of the State Capitol Building's floor plans to an exit or exit stairway is 213 feet on the First through Attic Floors and 257 feet on the Basement Floor according to the plans provided by the Owner. Depending on the fire-resistance ratings of the interior exit stairways, the distance of travel through the stairways to a public way may be included in the greatest distance of travel calculation. If this is the case, then the approximate greatest distance of travel that appears to exist from the east side of the Third Floor to an exit discharge to a public way (traveling down through the northeast stairway to the First Floor and out through the East Colfax Avenue exit on the north side) is 380 feet. If the building undergoes extensive renovation, the fire rating of the exit stairways could result in the travel distance through the stairways being included in the exit access travel distance. Assuming the interior exit stairways meet required fire-resistance ratings, the greatest distance of travel would only be measured to the exit stairway door instead of to the public way. The length of the greatest distance of travel and the occupancy loads of each floor should be verified as part of any future renovation plan.

The fire rating of the doors to the interior exit stairways is unknown. It was noted that the doors to the northwest and southwest interior exit stairways at the Attic Floor are not fire rated (see Fig. 2.1.B.2). According to Section 1022.2 of the IBC (2012), enclosures for interior exit stairways and ramps shall be constructed as fire barriers in accordance with Section 707. The interior exit stairway and ramp enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the interior exit stairways or ramps shall include any basements, but not any mezzanines. Interior exit stairways and ramps shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours. The State Capitol Building has 3 stories and an attic (with a museum space), a basement, and a sub-basement and must therefore provide a fire-resistance rating of not less than 2 hours at the interior exit stairways. Further, according to Table 716.5 of the IBC (2012), where fire walls and fire barriers have a required fire-resistance rating of 2 hours, the minimum fire door and fire shutter assembly rating is 1-1/2 hours. We assume that the interior exit stairways meet the code requirements but were unable to confirm the fire-resistance ratings.



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



According to Section 1007.3.2 of the IBC (2012), areas of refuge are not required at stairways in buildings equipped throughout by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. According to Section 1007.1 of the IBC (2012), accessible means of egress are not required in alterations to existing buildings. No marked areas of refuge were observed during the site visit for building occupants requiring assistance when exiting the building during an emergency.

It was noted that the egress signage observed during the site survey visit provides unclear, or confusing, instructions regarding evacuation and appears to be posted in a limited number of locations (see Fig. 2.1.B.3). There also did not appear to be stairway identification signs at each landing of the interior exit stairways included in the site survey visit. According to Section 1022.9 of the IBC (2012), a sign shall be provided at each floor landing in an interior exit stairway and ramp connecting more than three stories designating the floor level, the terminus of the top and bottom on the interior exit stairway and ramp and the identification of the stair or ramp. The signage shall also state the story of, and the direction to, the exit discharge and the availability of roof access from the interior exit stairway and ramp for the fire department. The sign shall be located 5 feet above the floor landing in a position that is readily visible when the doors are in the open and closed positions. In addition to the stairway identification sign, a floor-level sign in raised characters and Braille complying with ICC/ANSI A117.1 (2003) shall be located at each floor-level landing adjacent to the door leading from the interior exit stairway and ramp into the corridor to identify floor level.

Posted occupant loads were not observed outside of the hearing rooms, legislative chambers, or other assembly spaces during the site survey visit. According to Section 1004.3 of the IBC (2012), every room or space that is an assembly occupancy shall have the occupant load of the room or space posted in a conspicuous place, near the main exit or exit access doorway from the room or space. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or authorized agent.

According to the plans provided by the Owner the doors leading from the northwest and southwest stairways to the central arcade spaces on the First Floor do not swing in the direction of egress. It was also noted that there are doors leading from office areas to the central arcade spaces that do not swing in the direction of egress. According to Section 1008.1.2 of the IBC (2012), doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons.

According to the plans provided by the Owner, it appears that there are spaces which require egress through multiple adjoining or intervening rooms



or areas. According to Section 1014.2.1 of the IBC (2012), egress passing through an adjoining or intervening room or area is allowed where the areas served are accessory to one or the other, are not a Group H occupancy, and provide a discernible path of egress travel to an exit. According to Section 1014.2.2 of the IBC (2012), an exit access shall not pass through a room that can be locked to prevent egress. Compliance with these code requirements should be confirmed per current layouts throughout the building.

It was noted that there are areas throughout the building where the floor elevation changes from one side of a door to the other, with stairs beginning directly from the location of the door (see Fig. 2.1.B.4). According to Section 1008.1.5 of the IBC (2012), there shall be a floor or landing on each side of a door and such floor or landing shall be at the same elevation on each side of the door.



Fig. 2.1.B.2 Non fire-rated doors leading from the northwest and southwest exit stairways to the Attic Floor.



Fig. 2.1.B.3 Evacuation instructions direct occupants to exit the stairway at the Second Floor instead of at the First Floor.



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Fig. 2.1.B.4 Location noted where stairs lead directly from a door to a change in floor elevation. Landings are required for code compliance.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Investigate the storage of combustible materials on the Attic Floor and the Sub-basement Floor and correct the situation(s) as necessary per fire code requirements.
- Verify the fire-resistance ratings of the existing interior exit stairways and doors and upgrade as necessary.
- It is recommended that an egress signage assessment be completed of the State Capitol Building in order to determine a course of action, as necessary, to comply with code requirements.
- Install approved stairway identification signage throughout, as necessary, per code requirements.
- Post the occupant loads of all assembly spaces throughout, as necessary, per code requirements.
- Change the direction of the door swings leading from the northwest and southwest exit stairways to the central arcade spaces on the First Floor per code requirements that an exit access door swing in the direction of egress.
- Confirm compliance throughout with the code requirements governing egress passing through an adjoining or intervening room or area.
- Install landings at any doors with stairs leading directly from one side of the door to a change in the floor elevation, per code requirements.



Fire Suppression Systems

There is a fully automatic sprinkler system throughout the building on the Basement Floor through the Third Floor and throughout Mr. Brown's Attic. There were no sprinklers observed on the Sub-basement Floor or throughout the attic space.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Install a fully automatic sprinkler system throughout the Sub-basement Floor and where not provided on the Attic Floor per the International Building Code (2012) and the National Fire Protection Association Standards requirements.

Stairs and Ramps

There was a recent improvement project which involved a major safety upgrade to the State Capitol and included enclosed stair towers that was completed in 2009.

There were issues noted with the stair dimensions and details, within the interior exit stairways, during the site visit. The stairs within the northwest stairway were noted to have treads approximately 10 inches in depth (see Fig. 2.1.B.5) and risers approximately 8.5 inches in height (see Fig. 2.1.B.6) between the Third Floor and the Attic Floor. According to Section 1009.7.2 of the IBC (2012), stair tread depths shall be 11 inches minimum and stair riser heights shall be 7 inches maximum and 4 inches minimum. Given that these stairs were reported to have been added as part of the aforementioned major safety upgrade, it is assumed that the stair dimensions were approved by code officials at the time of the project.

It was noted throughout the exit stairways included in the site survey visit that there are currently railing systems on only one side of the stairs (see Fig. 2.1.B.7). According to Section 1009.15 of the IBC (2012) and Section 505.2 of ICC/ANSI A117.1 (2003), handrails shall be provided on both sides of stairs and ramps.

The top of the railings observed in the northwest stairway between the Third Floor and the Attic Floor are approximately 34 inches measured above the



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stair tread nosing. The top of the railings throughout the rest of the stairway are too low in height. The top of these railings, measured above the stair nosing, are approximately 31 inches (see Fig. 2.1.B.8). According to Section 1012.2 of the IBC (2012) and Section 505.4 of ICC/ANSI A117.1 (2003), handrail height, measured above stair tread nosing, or finish surface of ramp slope, shall be uniform, not less than 34 inches and not more than 38 inches. According to Section 1013.3 of the IBC (2012), required guards located along the open-side of walking surfaces shall not be less than 42 inches high, measured vertically from the adjacent walking surfaces and from the line connecting the leading edges of the tread nosings on stairs. However, these railing systems may be exempt due to the building's historic status.

The top of the balcony railings located throughout the central arcade spaces on the First through Third Floors is approximately 40.5 inches above finished floor (see Fig. 2.1.B.9). According to Section 1013.3 of the IBC (2012), required guards located along the open-side of walking surfaces shall not be less than 42 inches high, measured vertically from the adjacent walking surfaces and from the line connecting the leading edges of the tread nosings on stairs. However, this guardrail may be exempt due to the building's historic status.

The railing at the concrete stairway leading from the south tunnel to the main floor of the sub-basement is loose due to spalling of the concrete stair tread at the base of the handrail post (see Fig. 2.1.B.10). According to Section 1012.1 of the IBC (2012), handrails for stairways and ramps shall be adequate in strength and attachment in accordance with Section 1607.8.



Fig. 2.1.B.5 Depth of the stair treads noted in the northwest stairway between the Third Floor and the Attic Floor.





Fig. 2.1.B.6 Height of the stair risers noted in the northwest stairway between the Third Floor and the Attic Floor.



Fig. 2.1.B.7 Handrails currently exist on only one side of the stairs.



Fig. 2.1.B.8 The height to the top of the handrails, measured above the stair tread nosing, throughout the stairways from the Basement Floor to the Third Floor.

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Fig. 2.1.B.9 The height to the top of the balcony railings located throughout the central arcade spaces on the First through Third Floors.



Fig. 2.1.B.10 Loose railing at the stairway leading from the south tunnel to the main floor of the sub-basement.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Replace the existing stairway railing systems noted above with new railing systems that comply with code requirements, if allowed per historic designation guidelines.



- Install a new handrail system along the wall-side of each stair in order to comply with the code requirement that handrails shall be provided on both sides of stairs and ramps.
- Replace or rework the existing balcony railings located throughout the central arcade spaces on the First through Third Floors to comply with the code requirements for the minimum guardrail height, if allowed per historic designation guidelines.
- Repair the spalling concrete stair tread at the stairway leading from the south tunnel to the main floor of the sub-basement and reattach the railing post to provide a secure handrail per code requirements.

Doors

The majority of the interior doors throughout the building are equipped with historic knob-style door handles (see Fig. 2.1.B.11). According to Section 309.4 of the 2003 edition of ICC/ANSI A117.1, the knob-style handles do not meet the requirement that: operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Section 309.4 further states that the force required to activate operable parts shall be 5.0 pounds (22.2 N) maximum. However, these knob-style handles may be exempt due to the building's historic status. There were some doors with non-historic knob-style handles (see Fig. 2.1.B.12) and lever-style handles (see Fig. 2.1.B.13) noted throughout. Possible non-historic areas of the building, such as office spaces, the sub-basement, and the attic should be reviewed and considered for new lever-style door handles.



Fig. 2.1.B.11 Typical historic knob-style door handle found throughout the building.

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Fig. 2.1.B.12 Typical non-historic knob-style door handle found on some doors throughout the building.



Fig. 2.1.B.13 Typical lever-style door handle found on some doors throughout the building.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Replace all knob-style handles on the interior doors with lever-style handles if allowed per historic designation guidelines.
- If historic designation guidelines prevent the replacement of knob-style handles on the interior doors with lever-style handles, determine if any areas such as office spaces, the sub-basement, and the attic are exempt and could receive accessible door handle upgrades.



Security

The East Colfax Avenue Entrance on the north side of the building at the First Floor and the East 14th Avenue Entrance on the south side of the building at the Basement Floor are the two means of public access to the building. Both entrances are equipped with security guards, a conveyor belt scanning system for bags and coats, and a metal detector (see Fig. 2.1.B.14). The East 14th Avenue Entrance provides the accessible means of access to and from the building. There were security cameras observed in locations throughout the building (see Fig. 2.1.B.15). There was signage observed on doors regarding the security of specific areas and rooms in the building (see Fig. 2.1.B.16).



Fig. 2.1.B.14 The East 14th Avenue Entrance on the south side of the building at the Basement Floor is the accessible means of public access to and from the building.

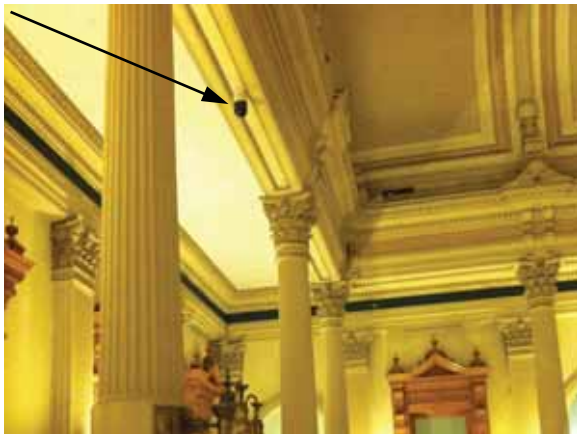


Fig. 2.1.B.15 Typical security camera observed during the site survey visit.



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Fig. 2.1.B.16 Signage observed on a door regarding security specific to an area of the building.

2.1-C GENERAL ACCESSIBILITY ISSUES

It is our understanding that the majority of the restrooms throughout the building are generally not accessible and that the majority of the restrooms are locked and for private use by building occupants. It was reported at the time of the site survey visit that there is a project underway to assess the restrooms and to develop a plan for renovating and making the restrooms throughout the State Capitol compliant with accessibility requirements.

There were restrooms on the Basement Floor, included in the site survey visit, which provide generally accessible facilities to the public (see Fig. 2.1.C.1). The Men's Restroom was noted to have one generally accessible urinal fixture. The Women's Restroom and the Men's Restroom each provide one wheelchair accessible toilet compartment, including a generally accessible lavatory within the stall. It was noted, however, that the accessible lavatory within each wheelchair accessible toilet compartment did not have insulation wrapped around the pipes (see Fig. 2.1.C.2).



Note: As an historic property, the State Capitol Building and surrounding grounds should comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and the National Park Service (NPS) Preservation Briefs.



Fig. 2.1.C.1 Accessible public restroom facilities are located on the Basement Floor.



Fig. 2.1.C.2 The accessible lavatory pipes are not insulated within the wheelchair accessible toilet compartments in the public restrooms on the Basement Floor.

Some of the drinking fountains throughout the building appear to comply with general accessibility requirements (see Fig. 2.1.C.3) and some of the drinking fountains do not comply with general accessibility requirements (see Fig. 2.1.C.4, Fig. 2.1.C.5, and Fig. 2.1.C.6).



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Fig. 2.1.C.3 Typical accessible drinking fountain observed during the site survey visit.



Fig. 2.1.C.4 Non-accessible drinking fountain noted in the Senate Gallery.



Fig. 2.1.C.5 Non-accessible drinking fountain noted in the House of Representatives Gallery.





Fig. 2.1.C.6 Non-accessible drinking fountain noted in the House of Representatives Gallery.

There were wheelchair lifts observed in the building on the Second Floor at a short flight of stairs leading to the House of Representatives Gallery (see Fig. 2.1.C.7) and leading to the Senate Gallery (see Fig. 2.1.C.8). It was reported that the wheelchair lift leading to the House of Representatives Gallery was planned for replacement with a new brass lift that would better match the historic aesthetic of the building's interior.



Fig. 2.1.C.7 Wheelchair lift observed on the Second Floor outside of the House of Representatives Gallery.



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Fig. 2.1.C.8 Wheelchair lift observed on the Second Floor outside of the Senate Gallery.

There were no break rooms included in the site survey visit. It is unknown whether the break rooms have accessible sinks.

It was noted that the signage throughout the building was generally inconsistent in style, font, font size, and color (see Fig. 2.1.C.9, Fig. 2.1.C.10, Fig. 2.1.C.11, and Fig. 2.1.C.12). All signage should comply with accessibility requirements per Section 703 of ICC/ANSI A.117.1 (2003).



Fig. 2.1.C.9 Inconsistent signage styles observed throughout.





Fig. 2.1.C.10 Inconsistent signage styles observed throughout.



Fig. 2.1.C.11 Inconsistent signage styles observed throughout.



Fig. 2.1.C.12 Inconsistent signage styles observed throughout.



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Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Continue with the plan to renovate and bring the restrooms throughout into compliance with general accessibility requirements.
- Wrap the pipes of the accessible lavatories with insulation in the wheelchair accessible toilet compartments located in the Basement Floor accessible restrooms.
- Replace all non-accessible drinking fountains with accessible drinking fountains throughout where possible.
- Install accessible sinks in the break rooms throughout where not provided and where possible.
- Install consistent signage throughout. Signage should comply with accessibility requirements per Section 703 of ICC/ANSI A.117.1 (2003).

2.1-D ELEVATORS

The age of the elevator cabs and equipment is unknown.

Note: As an historic property, the State Capitol Building and surrounding grounds should comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and the National Park Service (NPS) Preservation Briefs.

Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining



elements of the building and site should be in keeping with the historic status of the State Capitol Building.

- Verify the age and condition of the elevator cabs, electrical, and mechanical equipment to determine if any warranty is still in effect and to develop a timeline for upgrading the system.

2.1-E ENVIRONMENTAL

It was reported that asbestos and lead paint are present throughout the building. It was also reported that the interior of the roof deck is sprayed with an asbestos-containing layer.

There is also asbestos known to be present throughout the Long Tunnel (see Fig. 2.1.E.1).



Fig. 2.1.E.1

Recommendations:

- Thoroughly test the building for asbestos.



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- Abate all asbestos throughout the building.
- Sampling for lead paint must be completed if any painted surfaces will be sanded.

2.1-F PLANNED AND ON-GOING PROJECTS

The State Capitol Dome Restoration project was in progress at the time of the site survey visit with a projected completion in the spring of 2014.

There were a number of planned architectural projects reported at the time of the site survey visit. There is a planned project to restore the chambers. There is a planned project to renovate and to bring the restrooms into compliance with current ADA (Americans with Disabilities Act) standards. There is a planned project to replace all of the door hardware to match the existing historic hardware. There are also future plans for a roof rehabilitation project, a facade rehabilitation project, and a site rehabilitation project based on a comprehensive findings and recommendation assessment report of these areas dated August 20, 2012.

Note: As an historic property, the State Capitol Building and surrounding grounds should comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and the National Park Service (NPS) Preservation Briefs.



2.2 STRUCTURAL

2.2-A EXTERIOR BUILDING ENVELOPE

The exterior of the structure was in good condition. Minor spalls and cracks were observed in a few areas on the granite, but are not a concern at this time. Mortar joints between the granite masonry were deteriorated and allow water to enter the structure that leads to further deterioration (Fig. 2.2.A.1).



Fig. 2.2.A.1

Recommendations:

- The mortar joints should be repointed to fill the gaps and prevent water from entering behind the masonry and cause further deterioration.

Items noted above do not pose any structural loading issues based on the current use. Repairs are to maintain performance and reduce further deterioration.

2.2-B BUILDING INTERIOR

The overall condition of the structural framing that was readily observable was good. Previous water leaks were visible on the wood joists at the roof.

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No wood rot was observed.

Cracks were observed throughout the interior with the majority of them concentrated on the third floor (Figs. 2.2.B.1-2.2.B.3). The cracks are minor, but should be monitored for additional movement.



Fig. 2.2.B.1



Fig. 2.2.B.2



Fig. 2.2.B.3



Portions of the stone columns were removed at the east tunnels (Fig. 2.2.B.4). Upon further review, a portion of the columns appear to have been removed due to a remodel and these conditions do not pose a structural concern.



Fig. 2.2.B.4

Water intrusion was observed at a portion of the south tunnel and vault ceiling (Fig. 2.2.B.5). The water has caused corrosion on some of the structural framing and paint to peel off the brick masonry. The extent of deterioration to the structural beams could not be observed. The tunnel should be waterproofed from above to prevent further water infiltration and the tunnel should be replaced with new concrete framing and a waterproofing membrane applied.



Fig. 2.2.B.5



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Recommendations:

- Monitor the cracks throughout the building for additional movement and notify a structural engineer if the conditions worsen.
- Excavate above the tunnel and vault and provide a new structural slab and waterproofing to prevent further deterioration due to water infiltration. Heavy equipment, vehicular loading, and storage should be restricted in this area.

Items noted above do not pose any structural loading issues based on the current use. Repairs are to maintain performance and reduce further deterioration.

2.2-C FALL PROTECTION

The main roof of the State Capitol was sloped and no fall protection was provided. A fall protection system should be installed along the roof to meet current safety codes.

A fall protection system is currently being installed for accessing the exterior of the dome structure.

2.2-D PLANNED AND ON-GOING PROJECTS

The Capitol Dome is currently being restored. Martin/Martin is the structural engineer contracted for the restoration project and fall protection system at the dome structure.



2.3 CIVIL

2.3-A EXTERIOR BUILDING ENVELOPE/SITE

General

The Colorado State Capitol building is located north of East 14th Avenue, south of East Colfax Avenue, east of Lincoln Street and west of Grant Street with an address of 200 East Colfax Avenue in Denver, Colorado. The building is bordered by Civic Center Park to the west, state office buildings and mixed restaurant and retail to the north, retail and office development to the east, and state office buildings and a church to the south. The State Capitol Building site is approximately 3.5 acres. The existing site consists of the building, parking, site landscaping and street right-of-way including sidewalk and landscaping. The main building entrance is accessed from Lincoln Street to the west (Fig. 2.3.A.1). There are additional entrances on the north, east and south sides of the building. The condition of the site surrounding the building is consistent with a building approximately 115+ years old.



Figure 2.3.A.1 – State Capitol West Entrance

Grading and Drainage

The existing site generally slopes from east to west at grades ranging from 1% - 25% away from the Capitol Building. There is an existing high point in the center of Lincoln Street that splits the site runoff into two separate drainage basins. Existing runoff is conveyed overland and collected by street curb and gutter and storm sewer inlets located in the intersections of Lincoln and Colfax and Lincoln and 14th to the north and south respectively.

Most of the entrances into the building are accessed via stairs (Fig. 2.3.A.2).



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



There is ground level access at the south entrance for ADA accessibility (Fig. 2.3.A.3). The west side of the site climbs approximately 32 feet in elevation from Lincoln Street to the west capitol entrance. The north and south sides of the site have a grade change of approximately 17 feet from the streets to the entrances. The east side of the building is at grade.

The foundation of the building appears to be stable. No signs of settlement were observed.



Figure 2.3.A.2 – East Entrance Stairs



Figure 2.3.A.3 – South Accessible Entrance

The site is located in the Denver Storm Drainage Master Plan Basin 4600-01 (Central Business District). This basin consists of 2.67 square miles and conveys the 2, 5, and 100 year storm event via both storm sewer and roadway conveyance. Runoff from the major basin is conveyed westerly to Cherry Creek, ultimately discharging to the South Platte River. Within this basin, storm sewer facilities typically are designed to convey the 5-year rainfall event at a minimum and it is assumed the same for this area of the city.

The effective Flood Insurance Rate Map (FIRM Map Number 0800460201G,



effective date November 17, 2005) shows the property lies within Zone X, areas designated as outside of the 500-year floodplain. To our knowledge, there are no known existing flood control problems or drainage issues.

Utility Services

The building utility demands are unknown at this time. There are multiple utility lines located nearby within the public streets. There is an 8" water line located within 14th Avenue and a 10" water line located within Sherman Street. There are no known pressure problems at this time.

The Colorado State Capitol building is served by a sanitary sewer service line connecting to a 12" sanitary sewer main within 14th Avenue. Sanitary sewer is routed westerly at a 5.9% slope. City maps identify a parallel sanitary sewer line within 14th Avenue but this line is private and the size is unknown. There is also a sanitary sewer main located within Sherman Street. This sewer is 9" in size and is routed northerly at a 0.79% slope and connects to the 12" line within E. 14th Avenue via a manhole. There are no known sanitary sewer capacity problems at this time.

The existing storm sewer within E. 14th Avenue is quite small at 12" in diameter. The line collects runoff from the southern portion of the site at an inlet located at the Sherman Street and E. 14th Avenue intersection. This storm sewer is part of the West 14th Ave Extension line that is planned to be upsized per the City and County of Denver Master Plan dated June 2009. The upsizing will provide 5-year capacity in the storm sewer. The line adjacent to the Capitol is planned to be upsized to 18" but it is unknown when these improvements will be constructed. The existing storm sewer within Colfax Avenue is also quite small at 12" in diameter. This line collects runoff from the northern portion of the site at an inlet located at the Sherman Street and Colfax Avenue intersection. This storm sewer is part of the West Colfax Avenue line that is also planned to be upsized per the above mentioned City and County of Denver Master Plan. There is no storm sewer within Sherman Street or Lincoln Street. It was reported that there is a 12" storm sewer line in the southwest quadrant. This line turns into an 8" line and is directed towards Lincoln Park. The discharge location of the line is unknown.

Existing dry and regulated utilities (electric and telecommunications) are located in 14th Avenue.



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Figure 2.3.A.4 – Street Utilities

Site Paving

A few locations of broken concrete, and concrete cracking was observed. Repair or replace broken or cracked concrete.



Figure 2.3.A.5 Broken Site Concrete



Figure 2.3.A.6 Site Pavement Crack



The site asphalt was noted to be in very poor condition (Fig. 2.3.A.7 to Fig. 2.3.A.10). Numerous locations of rutting and cracking were observed. It was reported that the circle hardscape area experiences drainage issues. It is recommended that that demolition of the hardscape should occur. Grading to re-establish proper drainage patterns should be completed with new asphalt applied.



Figure 2.3.A.7 Poor Site Asphalt Condition



Figure 2.3.A.8 Poor Site Asphalt Condition



Figure 2.3.A.9 Poor Site Asphalt Condition



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Figure 2.3.A.10 Poor Site Asphalt Condition

Recommendations:

- Concrete cracks approximately 1/8 inch wide or smaller showing no differential movement can be sealed using an approved joint sealant. Cracks should be routed and cleaned per an approved industry method prior to sealing.
- Concrete panels showing numerous excessive cracking and/or differential movement should be replaced.
- Replacement of concrete shall be completed in full stone segments, i.e. to the nearest joint location. Repair the subgrade materials and place new curb & gutter or sidewalk. Replace backfill materials and repair/replace any landscaping/paving disturbed during repair operations.
- Demolish pavement in hardscape circle. Re-grade for drainage and re-apply asphalt.

2.3-B CODE ISSUES

The site exterior was analyzed for general conformance with ADA; however a complete accessibility audit is not included in the scope of services. The site appears to comply with current standards for entrance accessibility although it was noted that no street public or ADA parking was provided adjacent to the site. Settling along the ADA path was observed. The



concrete should be replaced at this location as it creates a tripping safety hazard (Fig. 2.3.B.1).

Site slopes were analyzed for drainage and ingress and egress. The slopes appear to generally meet typical geotechnical recommendations and standard practice of 10:1 for 10 feet and 2% in hardscape areas.



Figure 2.3.B.1 – Settlement in Concrete Along ADA Walkway

Recommendations:

- Replace concrete walks that have settled.

2.3-C PLANNED AND ON-GOING PROJECTS

The Colorado State Capitol Dome Restoration Project is currently under construction. Much of eastern and southeastern portions of the Capitol site were not accessible for a site assessment due to construction staging.





2.4 MECHANICAL, ELECTRICAL, AND PLUMBING

2.4-A OVERVIEW OF EXISTING SYSTEMS

ELECTRICAL SYSTEMS

The electrical systems are a mixture of older and newer equipment. There are three 13.2kV feeds that provide power to the building; two in the attic and one in the sub-basement. One of the attic transformers feeds the north side of the attic and the other feeds the south side of the attic. The sign on the outside of the fence indicates the voltage is 4160; however, the gear indicates the voltage is 13.2kV (see Fig. 2.4.A.1 and Fig. 2.4.A.2).

The north attic transformer is rated for 112.5kVA and is feeding 208V, 400 amps to a main switchboard located in the same room. The switchboard is feeding multiple panels. The switchboard was manufactured in 1981. Equipment of the same type and rating is also serving the south attic. The amp meter on the south attic read 190 amps at the time of the survey.

In the sub-basement, the transformer is rated for 2000kVA and feeds a 480V, 3000 amp main switchboard. This main switchboard is feeding panelboards in the sub-basement and upper floors (see Fig. 2.4.A.3 and Fig. 2.4.A.4).



Fig. 2.4.A.1 – Wrong voltage on sign



Fig. 2.4.A.2 – Switch name plate



Fig. 2.4.A.3 – Panelboards



Fig. 2.4.A.4 – Panelboards



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Recommendations:

- Remove all storage items from the electrical panelboards dedicated clearance space.
- Relocate all panelboards that have breakers higher than 6 feet 7 inches to a location that will be easily accessible.

Lighting

The lighting system throughout the building consists of a combination of historic, decorative luminaires, modern fluorescent luminaires and a few select LED luminaires. The descriptions to follow have been broken down by space type.

Common Areas and Corridors

The large public and transition spaces contain historic wall mounted luminaires that have been retrofitted with modern sources (see Fig. 2.4.A.5). The majority of these luminaires contain compact fluorescent lamps (see Fig. 2.4.A.6). The luminaires appear to be very well maintained and are in very good condition.



Fig. 2.4.A.5 – Compact fluorescent lamps





Fig. 2.4.A.6 – Lamp type

Office Spaces

The majority of the office areas throughout the building contain linear fluorescent luminaires (see Fig. 2.4.A.7 and Fig. 2.4.A.8). Some of the luminaires are suspended direct or indirect luminaires that contain two T8 lamps and others are recessed 2X4 parabolic luminaires that contain three T8 lamps. These luminaires are somewhat dated, but appear to be in good condition. Local switches near the entrance to each office or open office space are used to control the lighting system. Most of the spaces do not appear to be using automatic controls.



Fig. 2.4.A.7 – Linear recessed fluorescent





Fig. 2.4.A.8 – Linear pendant fluorescent

Legislative Chambers and Courtrooms

The lighting system in the legislative chambers and supreme courtroom includes a combination of downlights, decorative historic wall mounted luminaires, a large decorative chandelier in the center of the space, and task lights at various locations throughout the room (see Fig. 2.4.A.9, Fig. 2.4.A.10, and Fig. 2.4.A.11). The historic luminaires use compact fluorescent lamps with frosted lenses, similar to those used in the historic luminaires throughout the corridors. The downlights appear to use PAR lamps. The task lights have been modified to include compact fluorescent lamps. All of the luminaires are in very good condition and appear to be well maintained. Dimming controls and pre-set scene controls are used to adjust the various layers of light in the chamber (see Fig. 2.4.A.12). Task lights are individually controlled.

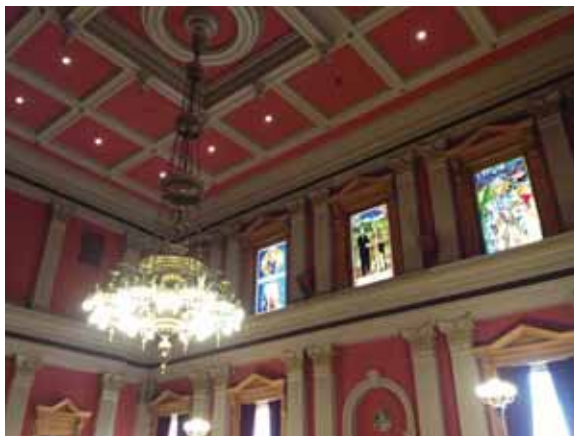


Fig. 2.4.A.9 – Chandelier and ceiling luminaires



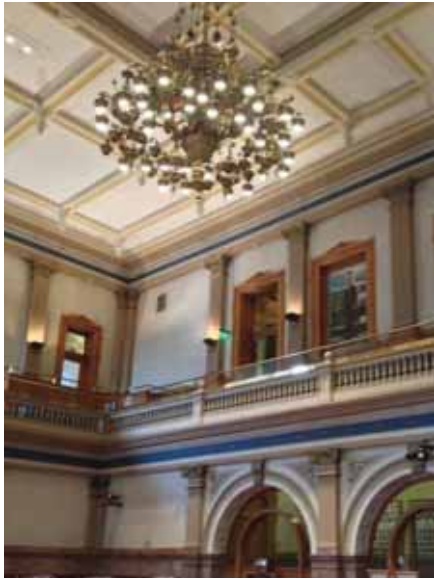


Fig. 2.4.A.10 – Chandelier and wall luminaires



Fig. 2.4.A.11 – Task luminaires



Fig. 2.4.A.12 – Lighting controls





Historic Display Wall

LED retrofit lamps have been installed on the track lighting that is used to highlight the historic display wall on the top floor of the building (see Fig. 2.4.A.13). These luminaires are in good condition and the retrofit lamps are providing adequate light levels and appropriate color rendering to the display wall.

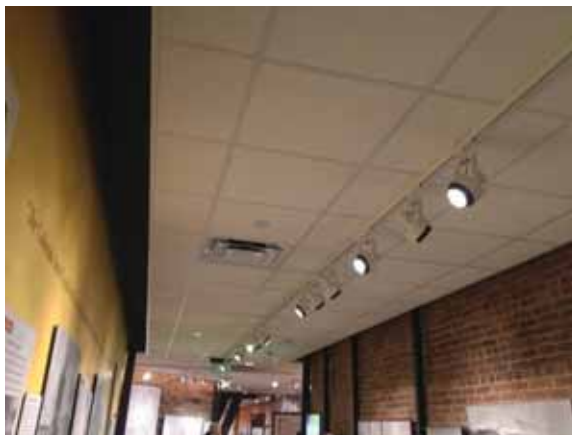


Fig. 2.4.A.13 – LED retrofit luminaires

Backlit Glass Display

There is a large, decorative stained glass window in the corridor on the second level that is backlit by several T12 fluorescent lamps (see Fig. 2.4.A.14 and Fig. 2.4.A.15). Due to the high energy consumption of these lamps and the noise that is caused by the ballasts required to run these lamps, it is recommended that these be replaced with an LED panel system.



Fig. 2.4.A.14 – Backlit Display





Fig. 2.4.A.15 – T-12 fluorescent luminaires

Exterior Lighting

The exterior lighting includes decorative post top luminaires as well as building mounted flood lights (see Fig. 2.4.A.16 and Fig. 2.4.A.17). All luminaires are in very good condition.



Fig. 2.4.A.16 – Exterior luminaires





Fig. 2.4.A.17 – Roof mounted luminaires

Emergency Lighting Systems

The exit signs appear to be recently updated and are in excellent condition (see Fig. 2.4.A.18). The majority of the lighting system in the building is backed up by the emergency generator.



Fig. 2.4.A.18 – Exit Sign



Recommendations:

- The lighting in this building is in very good condition. It is recommended, however, that automatic controls be incorporated throughout the building, specifically in the office areas. This would save energy in the offices, storage, hallways, break, and conference rooms. Eventually, LED luminaires could be used to replace all of the linear fluorescent lighting in the building to allow for energy savings and reduced maintenance costs. High lumen output LED downlights could also be used to replace the PAR lamp downlights found in the legislative chambers and courtrooms. LED luminaires would be ideal in this location because they could be easily integrated into the dimming control system and would require very little to no maintenance, which is particularly advantageous in an area with such high ceilings.

Fire Alarm

The fire alarm system appears to be a newer Notifier system with full detection; pull stations, elevator recall, and duct smoke detection (see Fig. 2.4.A.19 and Fig. 2.4.A.20). The devices look newer and in good working order. There is also a Very Early Smoke Detection Alarm (VESDA) system installed in the attic space (see Fig. 2.4.A.21). This system appears newer and in good working order.



Fig. 2.4.A.19 – Fire alarm control panel



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Fig. 2.4.A.20 – Smoke detector



Fig. 2.4.A.21 – VESDA system

General Power

The building's receptacles appear to be in good working order for the most part (see Fig. 2.4.A.22). There are a few older style receptacles throughout the building. In one office space, floor mounted pedestal type receptacles were observed (see Fig. 2.4.A.23). This type of receptacle is a tripping hazard. There was a lack of general purpose receptacles in the hallway, lobbies, and other areas. Since the finishes are historic, it is understandable why none have been added.





Fig. 2.4.A.22 – General receptacle



Fig. 2.4.A.23 – Above floor receptacle

MECHANICAL SYSTEMS

The HVAC system in the building has been upgraded over the years and at the moment, approximately 40 percent of the building is conditioned. The HVAC system consists of several geothermal heat pumps installed in the attic and basement mechanical rooms. Each heat pump has outside air ducted to the louver on the outside wall and the exhaust is ducted to the louver on the roof (see Fig. 2.4.A.24 and 25). The perimeter zones are provided with steam heating via steam convectors or baseboard heaters. Some portions of the building are conditioned by window type ac units. These areas should be connected to the central geothermal system to save operating energy costs (see Fig. 2.4.A.39 and 40).

The air distribution in the spaces is via a network of supply and return air ductwork. The spaces have either ceiling or wall mounted diffusers and grilles. The air distribution in the House of Representatives and the



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Senate Chamber is similar to displacement ventilation; supply air is by means of decorative grilles mounted under the seats and floor grilles and returns at high level on the walls. The raised floor is a supply air plenum in which supply air from the heat pumps is discharged (see Fig. 2.4.A.26, Fig. 2.4A.28, Fig. 2.4A.29, Fig. 2.4A.30, and Fig. 2.4.A.31). Steam reheat is provided in some of the supply air plenums. The old Supreme Court chamber has an air distribution system similar to the Senate Chamber. The airflow in the chambers appeared to be inadequate (see Fig. 2.4.A.45). Airflow measurement and air balancing will improve the space comfort conditions. There are openings around the duct passing through the rated ceiling /walls. These opening should be filled with fire proof material to maintain the fire rating of the assembly (see Fig. 2.4.A.41 and Fig. 2.4.A.42).

Most of the building's HVAC motors have VFD's, which helps with energy efficiency (see Fig. 2.4.A.32). There are some motors which don't have VFD's and are not premium efficiency (see Fig. 2.4.A.43 and Fig. 2.4.A.44).

The building has separate water entry and a domestic water booster set is provided for domestic water supply within the building. The domestic hot water is generated by steam in a heat exchanger (see Fig. 2.4.A.33).

The life safety systems in the building have been updated over the years. The building has a VESDA smoke detection system and fire sprinkler system (see Fig. 2.4.A.34 and Fig. 2.4.A.35). The stairwells are pressurized using stairwell pressurization fans which inject air at the bottom of the stairwell (see Fig. 2.4.A.36). The fire pump and the fire command center is located in the basement. The building is in relative compliance with current life safety code as per The Denver Authority Having Jurisdiction (AHJ). There are some spaces where combustible material is store which may a fire hazard and affect the life safety of the building occupants (see Fig. 2.4.A.46 and Fig. 2.4.A.47).

Presently, steam condensate is being discharged to drain. Most of the condensate lines don't drain downhill. Some of the steam traps have failed. Project is underway to install a heat exchanger to preheat water with steam condensate before being discharged to drain (see Fig. 2.4.A.37). This will save energy utilized in preheating the water. The plumbing hot and cold water mains don't have isolation valves. Some of the valves are failed in position and need replacement.

There is a cooling tower and flat plate heat exchanger in the basement (see Fig. 2.4.A.38). This is used to generate free cooling during the winter season.

The controls in the building are Siemens Direct Digital Controls.





Fig. 2.4.A.24 – Geothermal heat pump



Fig. 2.4.A.25 – Geothermal heat pump



Fig. 2.4.A.26 – Supply air plenum

2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 2.4.A.27 – Supply air grille



Fig. 2.4.A.28 – Supply air grille



Fig. 2.4.A.29 – Supply air grille





Fig. 2.4.A.30 – Floor grille



Fig. 2.4.A.31 – Supply air plenum



Fig. 2.4.A.32 VFD's

2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 2.4.A.33 – Domestic hot water heater



Fig. 2.4.A.34 VESDA System



Fig. 2.4.A.35 Sprinkler Piping





Fig. 2.4.A.36 Stairwell
Pressurization Fan



Fig. 2.4.A.37 – Steam condensate heat
recharger



Fig. 2.4.A.38 – Cooling
tower and heat recharger

2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 2.4.A.39 – Window AC units



Fig. 2.4.A.40 – Portable AC units



Fig. 2.4.A.41 – Opening in slab





Fig. 2.4.A.42 – Opening in wall



Fig. 2.4.A.43 – Standard efficiency motor for exhaust fan in attic



Fig. 2.4.A.44 – Exhaust fan with standard efficiency motor



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Fig. 2.4.A.45 – Supply air griller



Fig. 2.4.A.46 – Christmas decoration (combustible material)



Fig. 2.4.A.47 – Wood storage (combustible material)



Recommendations:

- The building has an energy efficient HVAC system; however, presently only 40 percent of the building is conditioned. Consider conditioning the rest of the building using a geothermal system. This will eliminate the use of portable air-conditioners and wall mounted air-conditioners, which are currently installed in some rooms.
- Seal openings around duct and pipes crossing the fire walls and slabs. This will maintain the rating of the walls and slabs.
- Replace standard efficiency motors with premium efficiency motors. This will help in energy cost savings.
- Verify air flow in the chambers. Based on the supply air grilles provided it appears that the airflows may not be sufficient for the occupancy of the chambers. This will improve the indoor occupant comfort conditions.
- Combustible material, such as Christmas decorations, is being stored in the attic. Combustible storage in the attic may exceed design criteria for fire sprinklers.
- Verify the operation of the heat pumps in the basement. Currently, these heat pumps draw air from the first floor using the basement corridors as return air plenums.
- Excessive combustible material is being stored in the basement. Even though the basement is sprinklered, storage of such material is a fire hazard. The basement corridors are used as return air plenums. Storage of combustible in plenums is prohibited by code. Remove such material from the basement. If it needs to be preserved due historic reasons, verify the sprinkler design density is appropriate for the fire loading.
- Verify air distribution in the conditioned spaces and ensure that minimum outside air is provided as per the space usage and code requirements.
- Consider installing life safety systems, such as atrium smoke exhaust, to bring the building to full compliance for current code requirement.
- The plumbing piping appears to be old and piping failures has been reported. Assessment of plumbing piping is underway.
- One of the heat pump units has its return air plenum in with the tower, allowing water treatment chemicals into the air stream.



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- Provide isolation valves on hot and cold water mains. Repair valves which have failed.
- Provide new steam traps on the condensate return lines.

2.4-B CODE ISSUES

ELECTRICAL CODE ISSUES

Ladders and other equipment are stored in areas required for the clearance of the panelboards (see Fig. 2.4.B.1 and Fig. 2.4.B.2). The National Electrical Code requires dedicated clearance in front of this equipment.

The National Electrical Code indicates that overcurrent devices shall be readily accessible and shall be no more than 6 feet 7 inches. At least one of the panelboards in the walkway on the third floor has breakers that are taller than 6 feet 7 inches (see Fig. 2.4.B.3 and Fig. 2.4.B.4). Below the panelboard are historical finishes; the panelboard may need to be relocated so it can be mounted at the correct height or split into two smaller panelboards.



Fig. 2.4.B.1 – Cardboard on transformer





Fig. 2.4.B.2 – Ladder on panel



Fig. 2.4.B.3– Panel too high



Fig. 2.4.B.4 – Over 7 feet to reach main breaker



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



Recommendations:

- Remove ladders and other equipment to a storage room or area.
- Relocate panelboard that is higher than the national electrical code dictates.

MECHANICAL CODE ISSUES

It appears that outdoor airflow in some conditioned spaces is not per the current code.

The building is not in full compliance of current life safety codes (Denver AHJ has deemed it to be in relevant compliance).

Recommendations:

- Verify airflow in the spaces that are conditioned. It appears that the airflow may not be sufficient for the present occupancy indoor air quality. Provide minimum airflow as per the current code requirements.
- Consider installing an atrium smoke exhaust system to enhance life safety.

2.4-C PLANNED AND ON-GOING PROJECTS

- Plumbing assessment of the building
- Heating and cooling piping upgrades
- Geothermal project
- Steam condensate heat recovery
- 13.2kV loop assessment
- Restoration of both chambers
- LED lighting upgrade
- Dome restoration/Assessment of the roof, facade, windows

No date has been established for this work at present.





2.5 VOICE AND DATA

2.5-A OVERVIEW OF EXISTING SYSTEMS

Findings

Note SMW provided voice/data survey and assessment scope for this building on March 25, 2014.

- The data center is on the first floor. This IT room has carpet and static discharges are likely. The data center server the Governor's office and mansion.
- Floors 2 and 3 have their own IT group and servers.
- Reportedly, this facility was upgraded approximately three years ago. This IT room has 3 servers in it.
- The Wireless Access Points are also supported from this IT room.
- The room itself is small and does not need to be right sized.

Recommendations:

The recommendations and guidelines within this section shall establish the Basis of Design for the IT Infrastructure portion of the renovation of the State Capitol building.

The building should be provisioned with the following pathways, spaces and cable media.

Telecommunications Rooms (i.e. Spaces)

1. Main Equipment Room (MDF) / Entrance Facility Room (EF)

- One consolidated Main Equipment Room (MDF) / Entrance Facility Room (EF) shall be installed within the building.
- This main MDF room will include both the Building Entrance Facility for supporting outside plant cabling and raceways and will be the main equipment room for installation of the low voltage and communications systems' (also referred to as the Technology systems) head end equipment.



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- The MDF room shall be a minimum of 12' x 16' in size, capable of supporting the installation of one row of racks, with approximately six (6) equipment racks / cabinets.
- The MDF room shall be installed on the first floor of the building. Avoid the basement due to potential flooding.

2. Telecommunications Rooms (IDFs)

- A minimum of one (1) telecommunications room (i.e. IDF rooms) will need to be installed on each floor and should be vertically stacked, floor-to-floor. Buildings with larger floor plates may require a 2nd IDF room on each floor, vertically stacked as a 2nd riser within the building.
- The IDF rooms shall be a minimum of 10' x 12' in size, capable of supporting the installation of one row of four (4) equipment racks.

3. Telecommunications Room Locations

- The TIA Standards requires one IDF room per floor and it shall be located as close as possible to the center of the area being served, preferably in the core area.
- Additional IDF rooms are required per floor when the floor area served exceeds 10,000 square feet or the horizontal distribution distance to the field device or telecom outlet exceeds 295 feet (or 90 meters).
- Telecommunications rooms should not share a common wall with an electrical room due to potential electromagnetic interference (EMI) issues. If it is imperative due to constraints to place both of these rooms adjacent, then a double wall with a 1 foot internal separation should be considered or the layout of the electrical room should preclude mounting of equipment on the common wall.

Telecommunications Pathways (i.e. Conduit/Raceways)

1. Backbone Pathways

- Telecommunications pathways will need to be installed from the MDF room to each IDF room within the building.
- Provide a minimum of three (3) 4 inch conduits from the MDF room to each IDF riser within the building.
- Provide a minimum of three (3) 4 inch conduit sleeves vertically between stacked IDF rooms.



- Provide a telecommunications pathway up to the roof of the building to support future satellite antennas.

2. Horizontal Pathways

- Telecommunications pathways will need to be installed from telecom outlets and IP field devices to the IDF room serving the floor.
- Provide cable tray on each floor within the accessible ceiling spaces of the main corridors as the primary pathways from IDF rooms to telecommunications outlets and field devices.
- Cable tray shall be ladder type aluminum tray with a 9" rung spacing and a width of 18 inches in main corridors and 12 inches in secondary cable tray segments. Cable trays shall be 4 inches in depth.
- For facilities designated as historic buildings, alternate cable routing may require the use of surface mounted conduit and wireways, to comply with historic preservation codes. In these cases, the cable installation design must be coordinated with the State prior to construction.
- At the telecom outlet locations, provide 4" square back boxes that are 2-1/8" deep with a 1" conduit installed within the wall to the nearest accessible ceiling space, for routing cabling to cable tray.
- If outlets need to be surface mounted then provide 1" surface mounted raceway from the back box to the main telecom distribution pathways.

Telecommunications Cabling

1. Telecommunications Backbone Cables

- Furnish and install a 24-strand singlemode fiber cable and a 24-strand multimode fiber cable from the MDF room to each IDF room in the building. The multimode fiber cable will be OM4 50 micron laser optimized optical fiber.
- Install fiber optic cable in a 1-1/4" innerduct end to end.
- Furnish and install a 50-pair or 100-pair copper backbone cable from the MDF room to each IDF room in the building.

2. Telecommunications Horizontal Cabling

- Furnish and install a Category 6 unshielded, twisted pair (UTP)



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horizontal cable from telecom outlets and IP field devices to termination hardware in the IDF rooms.

3. Cabling within Single Occupancy Offices

- Provide a minimum of two telecommunications outlets, located on opposite walls, each with two data jacks. Install two Category 6 horizontal cables to each outlet from the IDF room serving the area.

4. Wireless Access Points (WAPs)

- For ceiling mounted WAPs, install two Category 6 horizontal cables to each WAP from the IDF room serving the area.
- Provide WAPs at 20- 45 foot spacing or an average of 25-foot centers on each floor, mounted in accessible ceilings.

2.5-B CODE ISSUES

Findings

It is our understanding there are currently no code issues in the building related to the existing voice/data IT/Telecommunications Infrastructure.

Recommendations:

For new renovation work, codes which would be applicable would include buy may not be limited to:

- International Code Council (ICC)
- National Electrical Code (NEC)
- Telecommunications Industry Association (TIA)
- Electronic Industries Alliance (EIA)
- Institute of Electrical and Electronics Engineers (IEEE)
- American National Standards Institute (ANSI)



- Underwriters Laboratories (UL)
- State/Local Governing Authorities Having Jurisdiction

2.5-C PLANNED AND ON-GOING PROJECTS

It is our understanding there are no known planned and/or on-going IT/ Telecommunications Infrastructure projects for the State Capitol building currently.





2.6 SECURITY SYSTEMS

2.6-A OVERVIEW OF EXISTING SYSTEMS

Findings

Note: SMW not scoped for this task, did not provide survey work for Security.

It was reported that Hirsch access control card readers need to be upgraded. It was also reported that the security camera system needs to be replaced.

For general security findings, see 2.1-B Code Issues: Security.

Recommendations:

The security systems design guidelines outline electronic security systems infrastructure which would enhance security operations and provide a safe and secure environment for persons and assets within the State Capitol building. The purpose of this recommendations report is to provide a description of electronic security system parameters which would provide a safe and secure environment for all those persons and assets within the facilities. It is intended to provide valuable information to both technical and non-technical readers for ongoing coordination with security program requirements.

The security systems should be planned and designed to allow the security personnel the operational flexibility to provide various levels of security based on the threat level at a given time. The systems must further provide capability to deliver the highest quality technology today and in the future for system expansion and change. Security system design shall employ various security technologies. Integrated security systems must be capable to function independently if required, as well as be monitored and controlled from CSP Central Command Center.

Recommended electronic security systems to be considered for implementation and/or upgrade include access control, intrusion detection, duress alarm, intercom, video surveillance, and emergency call system. These applications make it possible for security personnel to view activity both inside and outside the facilities from a central monitoring location or a network-connected security workstation at another location, so they



can provide an appropriate response. Care shall be taken to ensure that interior and exterior common circulation areas accessible to both staff and public will be properly monitored. Electronic security control and monitoring applications shall be implemented as appropriate to provide a safe and secure environment to the facility as a whole. This report is not designed as a specification, but rather as an outline to provide information on recommended security systems technology and design criteria.

The following security design methodologies, criteria and guidelines should be considered and used in development of the security program and physical/electronic security design for the building:

- Industry Standard / Best Practice Design
- Crime Prevention through Environmental Design (CPTED)
- Layered Security / Concentric Circles of Protection
- Integrated Design – Physical/Electronic/Operational
- ASIS Facilities Physical Security Measures
- IESNA G-1-03 Guideline for Security Lighting
- Unified Facilities Criteria UFC 4-010-01
- State of Colorado Design Standards, as applicable

The access control system (ACS) will be an expansion of the existing campus wide system currently installed throughout other State buildings, and utilize similar ACS door controllers and peripheral equipment. New proximity type card readers shall operate with the existing proximity card credentials. Door devices are to wire through a consolidation junction box above door, and be routed to nearest IDF room where door controllers and power supplies are located. ACS door controllers installed in telecommunications IDF rooms will connect to the buildings LAN for communication with the ACS server. New security equipment to be located within IDF rooms must be coordinated with State IT technical staff. Each access controlled door should be equipped with card reader, electrified lock, door position switch, and request-to-exit-motion device (or hardware integral request-to-exit switch). All doors described as a card reader controlled access door will be outfitted with the standard equipment listed, unless specifically defined elsewhere to vary from this configuration. It is recommended that for new controlled doors, magnetic locks and electronic strikes not be used. Electrified lever sets and panic hardware



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



should be equipped with request-to-exit switch in exit hardware. Specific door hardware requirements for each controlled door location are to be coordinated with the State. The ACS shall also serve as the primary security management system for monitoring intrusion alarms. Intrusion alarms such as door status and motion detection alarms are to be integrated with and monitored through the access control security management system. Alarm device additions and modifications shall be coordinated with State during the design phase. Security personnel shall be able to monitor security system alarm notification devices through network connected client workstations, where authorized.

The video surveillance system (VSS) will implement IP digital HD type cameras integrated with the existing VSS. Where analog head-end equipment is located, IP camera digital signals are to be decoded to analog video signal. This will allow for future migration from any older analog equipment to an IP based network video solution. IP security video shall be managed by the existing server/recorders, and new network video recorders are to be installed where required to support the addition of new cameras. It is recommended for renovation work that older technology analog camera be replaced with IP digital security camera, connected to the VSS via building LAN. Security cameras may be made up of both fixed field of view and pan-tilt-zoom (PTZ) type, and should be IP, minimum HD quality, and be Power-over-Ethernet (PoE) devices. Camera network cabling shall pull to nearest IDF room, providing connectivity to the building LAN. IP camera network cabling shall terminate to building PoE network switches. Security personnel shall be able to monitor the security video surveillance system through network connected client workstations, where authorized.

The State's existing wireless duress alarm system infrastructure should be expanded where needed to support new locations of wireless duress buttons. CSP Central Command Center monitors a wide network of wireless duress buttons at multiple, local State facilities in Denver. This is accomplished using wireless mesh coverage by use of repeaters located on the State facilities. Fixed point wireless duress buttons may be located at designated points within the building, for staff use in emergency situations. The duress system will utilize wireless duress buttons, which transmit RF signals to an infrastructure of wireless RF receivers and repeaters. System repeaters will be provided where necessary to boost the strength of the wireless signals. Duress alarms in the building are to incorporate this technology, and duress alarms within the complex will be monitored by the existing CSP head-end system.

An Intercom Communication System (ICS) should be implemented to



enhance security operations in the facility, for security personnel, staff and visitors. It is strongly recommended that an Intercom over IP (IoIP) Communications solution be used for this application. And IoIP system would provide superior audio quality utilizing the latest digital technology, and provide much greater flexibility for locating both master and sub-stations anywhere on the local area network via IP communications. Security personnel in CSP CCC would be provided with two-way audio communications to any remote building IP intercom sub-station.

Within the building, new head-end security control equipment is to be located in IDF or technology rooms, as coordinated with State IT technical staff. Equipment may include ACS control panels, power supplies, duress alarm panels, network video recorders, and UPS units. All critical electronic security equipment must be backed-up with emergency power circuits or UPS units. State security personnel and other authorized staff may remotely monitor access control events, system alarms, and security video through network connected client workstations. For building renovation work, requirements for security device additions/upgrades and specific security system functionality are to be coordinated with State security personnel during design and construction phases.

The security systems described above are generally controlled and monitored centrally, primarily from Colorado State Patrol's Central Command Center (CCC), located in Denver CO. The above listed security applications must be evaluated during renovation project schematic design phases to confirm applicability to the most current State electronic security systems standards. For any renovation work, security contractors should be pre-qualified prior to bidding, and will be required to work very closely with State security personnel during installation, commissioning and testing phases. All security installation work, construction standards, and operation requirements are to be closely coordinated with the State by the electronic security integrator.

Electronic security systems provided for the State Capitol building shall be an extension of existing State facility security system infrastructure, as described earlier in the report. It is generally recommended that the building be provided with electronic security applications and equipment as listed below:

Access controlled doors:

- Main entry



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



- Suite entries on each floor
- IDF rooms, recommended
- Sensitive spaces

Intrusion alarms:

- Access controlled doors
- Emergency egress only doors
- Perimeter doors

Intercom stations:

- Main entry, recommended
- Receiving dock door, recommended

Wireless duress alarms:

- Public interface counters
- Cash handling locations
- Loading docks

Video surveillance cameras:

- Perimeter entry/exit doors
- Entry lobby/reception
- Elevator lobbies
- Emergency exit doors
- Loading docks
- Building exteriors

Security system cabling should generally share cable routes with that of the building structured network cabling system. The network cabling paths and



riser locations generally provides the most direct route through a facility, and typically contain sufficient space for security cabling requirements. For facilities designated as historic buildings, alternate cable routing may require the use of surface mounted conduit and wireways, to comply with historic preservation codes. In these cases, the cable installation design must be coordinated with the State prior to construction. Data cabling required for IP security cameras should be provided and installed by the Telecommunications Contractor. This is the recommended design and construction method for provisioning of the IP camera network cabling to support the VSS cabling infrastructure. State IT construction standards for network and security cabling types and jacket color must be adhered to. Security cabling should never be exposed and should be contained in protective conduit wherever cable is accessible to vandalism, accidental damage, or where it traverses any unsecured space. Security cabling shall be plenum rated where required by codes.

The security conduit pathway system should be coordinated with the electrical distribution system in order to maintain separation from motors or transformers, separation between parallel runs of telecommunications and electrical cabling, and separation from fluorescent lights.

Basic Security Conduit requirements:

- All security cabling located in in-accessible spaces shall be installed in conduit.
- All exposed security system cabling and shall be installed in conduit.
- All security system conduits shall be minimum $\frac{3}{4}$ " unless otherwise required.
- All penetrations of rated walls shall be fire-stopped in an approved manner to prevent the passage of flame, smoke, and gas.

Head-end security control equipment shall generally be located in Intermediate Distribution Frame (IDF) rooms, or other technology rooms. Security equipment locations within IDF rooms must be coordinated with State IT technical staff during design phase. This equipment may include access control panels, wireless duress equipment, power supplies, network video recorders, and UPS units. Specific requirements and locations within the rooms will be determined during the design phase. Security cabling within IDF rooms shall be piped to wire gutters and or security equipment panels. Within IDF rooms, it is anticipated a 4'x8' section of wall space shall be reserved for security equipment, and supplied with fire



2.0 OVERALL BUILDING ASSESSMENT FINDINGS & RECOMMENDATIONS



treated plywood backboard. All security equipment in the room should be located away from potential sources of electro-mechanical interference (EMI) and water infiltration. Rack mounted security equipment may share space in telecommunication equipment racks, where appropriate, and as coordinated State IT personnel. One dedicated 120VAC 20A power circuit shall generally be required at each security wall board location and at each security equipment rack. In the event of loss of building power, all mission critical electronic security equipment requiring continuous 120VAC power shall be provided with back-up UPS units. All UPS units shall be stand-alone units dedicated for security, and shall be sized accordingly based on required run time.

2.6-B CODE ISSUES

Findings

It is our understanding there are currently no code issues in the building related to existing electronic security systems.

Recommendations:

For new renovation work, codes which would be applicable would include but may not be limited to:

- International Code Council (ICC)
- Americans with Disabilities Act (ADA)
- National Fire Alarm and Signaling Code (NFPA 72)
- National Fire Protection Association Life Safety Code (NFPA 101)
- National Electrical Code (NEC)
- Telecommunications Industry Association (TIA)
- Electronic Industries Alliance (EIA)
- American National Standards Institute (ANSI)



- Underwriters Laboratories (UL)
- City of Denver Access Control Code
- State/Local Governing Authorities Having Jurisdiction

2.6-C PLANNED AND ON-GOING PROJECTS

It is our understanding there are no known planned and/or on-going Security System projects for the State Capitol building currently.



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS AND RECOMMENDATIONS

3.0-A HISTORIC OVERVIEW

Introduction

The State Capitol Complex Capitol Building, located at 200 East Colfax Avenue, is listed as a contributing resource in the Civic Center National Historic Landmark District (#5DV161, NHL 10/17/2012). Construction began in the late 1880s and tenants moved into the building in 1894 though construction continued. The Capitol is a LEED EB/OM building. Due to the historic value and importance of this resource, the following narrative provides a process for maintaining the historic character of the building, while allowing for an upgrade to the building as a whole and a framework for how to utilize valuable space within the building.

This narrative is broken into two basic sections:

- Character defining elements – those aspects of the building that make up the overall historic “impression” of the building.
- Treatment Zones – which are broken into areas of the building that should be rehabilitated to their historic appearances and areas which should have the remaining historic fabric and layout maintained as much as possible.

The purpose of the narrative is to provide a guide for how to approach the redevelopment of the building at a master planning level.

Character Defining Elements

The character defining elements on the exterior of the Capitol building are height, size, materials, fenestration pattern and massing. These elements all contribute to the overall impression of the building. Materials play an important role in defining the character of the building and the important material on the exterior is the granite used to create the Classical massing. The facade have Greek Revival detailing including porticos with pediments on all four elevations and a mostly symmetrical exterior layout. Grand staircases leading to the four entry porticos contribute to the sense of scale and grandeur of the building. The gold dome is a prominent feature of the building and is a character defining element. The original windows



contribute significantly to the overall composition of the elevations.

Interior spaces that are important to the character of the building are the rotunda, atria, arcades, legislative chambers and supreme court room. Original materials that remain and are important to the character of the building are the onxy, marble and granite finishes throughout the building that range in color from white to shades of red to black. The original white oak trim used throughout the building is also an important contributing material, as are the ornamental and decorative plaster wall and ceiling finishes and marble flooring throughout the public spaces. The original window frames, sills and trim and the painted steel vaults and skylights at the top of the atrium promote the overall sense of integrity and stateliness for all of these spaces.

Treatment Zone 1 – Exterior Facade

Description:

The four-story Capitol building has the same detailing and symmetry on all four elevations with a center portico on all four facades. The building is surrounded by a grass lawn with multiple deciduous trees planted throughout. An asphalt drive runs around the building and provides parking for some of the building occupants. The grass area extends out to the west and provides a link to Civic Center Park. Public visitors to the building enter at the south ground floor entrance and employees can enter through that entrance or the north ground floor entrance.

The symmetrically designed, Capitol building is characterized by its Greek Revival design with porticos on all sides of the building and the gold capped dome. Granite stone blocks with drafted margins compose the elevations, broken by a water table at the first floor level, a belt course at the second floor level and a cornice above the third floor with a smooth parapet above it. Pilasters between the windows and on the building corners run from the belt course up to the entablature. The entablature has four bands on the architrave, a plain frieze and a stone cornice with dentils below it. Each elevation has a wide granite stair that leads up to the center portico. The portico has arched openings between pilasters on the first floor with granite pilasters between them. Above the belt course Corinthian columns support



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



an angled pediment. The pediment on the west elevation has carved figures on the granite while the other three have smooth finished granite. Window openings throughout these facades are rectangular and generally the original wood windows are intact. Every summer individual window mounted air conditioning units are installed in 40-60 windows throughout the building. The units are removed and stored in the sub-basement every fall.

A granite rotunda capped by the distinctive gold dome rises out of the center of the building. The bottom level of the rotunda has a row of columns around the outer edge of the covered walkway that runs adjacent to the face of the building which has large windows with arched transoms that are separated by pilasters. The next level also has large windows with arched tops divided by pilasters. On both of these levels, there are smaller pediments that align up with the large granite pediments below – the lower level has arched pediments and the upper has angled. These are capped by the gold dome which has rectangular windows openings spaced around it and a small rotunda that projects out of the center and is capped by another dome.

The building retains the original form, massing and detailing of the 1885 design with very little change to the exterior facade. The stone veneer although dirty, is in good condition with minimal damage to the stone itself.

Recommendations:

- The exterior facade remains in its original historic condition, has been relatively well-maintained over the years and is the most publicly viewed and recognizable portion of the building. The facade consists of historic fabric and the exterior character of the building has been maintained. Therefore, the exterior should be restored.
- In general the exterior facade is in good condition though dirt has accumulated on all of the elevations. The building should be cleaned with a cleaner that is appropriate for marble and granite. Some of the mortar is failing or has been improperly pointed in places and should be repointed with an appropriate mortar that matches the composition of the original. Granite that is eroded or spalling should be repaired or patched. Ongoing restoration work on the rotunda and dome is due to be completed in the summer of 2014.
- All of the windows are in good to fair condition with some evidence of peeling or deteriorating paint and wood deterioration on some of the sash. A few of the windows have been restored. All windows should



be restored - remove sealant and reseal all joints; stabilize all areas of deteriorated wood; remove loose paint, prime and repaint all frames and sash; remove and replace loose or missing weather stripping components throughout. A major detractor from the facade is the yearly installation of the window mounted air conditioning units. A full building central HVAC system should be installed to eliminate the need for these units.

- All work should be done in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and NPS Preservation Briefs.



Zone 1 Exterior Facade:
West elevation



Zone 1 Exterior Facade:
East elevation



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Zone 1 Exterior Facade:
North elevation

Treatment Zone 2 – Original Interior Circulation

Description:

Original interior circulation in the Capitol includes corridors, atria, arcades and the rotunda. A variety of stone finishes are used throughout these spaces including Rose Onyx, Italian Red Verona Marble, Colorado Yule Marble, Tennessee Grey Marble, Vermont Danby Marble, Georgian Marble, Black Granite, Black Serpentine and Tennessee Cedar Marble.

Originally corridors on the basement and first floor levels ran east/west and north/south and connected all of the entrances to each other and the central stair. In the basement, office space has been built out into the corridor running in the north/south direction and office space has completely closed off the circulation in the east/west direction off the center stair. Corridors on the upper floors connect office space to the arcades. Corridors have stone tile flooring and the walls have stone base, wainscot and cap with painted plaster. Round painted cast iron columns and rectangular columns with a plaster and stone finish are spaced throughout the basement corridors. These same columns exist on the first floor but have more decorative finishes – the round columns have a marble wainscot and the rectangular columns are fluted above the wainscot. Ceilings in the basement corridors are smooth painted plaster with a small decorative cornice. Upper floor corridor ceilings are painted plaster with plaster decorative mouldings and dropped beams. Plaster ceiling ornamentation is typically painted with a



decorative paint scheme. Large pendant hung brass chandeliers and brass wall mounted sconces illuminate the first floor while simpler historic pendant hung light fixtures exist in some of the upper floor corridors.

The rotunda located in the center of the building has stone flooring and stone base, wainscot and cap adjacent to walking surfaces. The rest of the walls in the rotunda are painted plaster with decorative cornices, fluted pilasters and window mouldings. The ceiling is a domed coffered ceiling with decorative moulding in the coffers. There is a grand stair with marble treads and risers that leads from the first to the second floor and can be viewed from balconies above which have a cast brass baluster. A series of murals painted on the rotunda walls by Allen True and completed in 1940 are intact.

There are two central atria in the building – one on the north and one on the south of the central rotunda. The atria are open from the first floor to the third floor with an oval opening in the first floor connecting the space to the basement. At each floor, the atria have columns along the edges with marble wainscot at the base above which smooth metal transitions to fluted and is capped by a Corinthian capital that supports the decorative plaster cornice. Brass light fixtures are mounted to the columns and cast brass balusters run between the columns. The atria are capped by painted sheet metal arched paneled ceilings with a skylight in the center. The interior skylights are intact however the skylight in the roof above that allowed light into the atria has been closed over. These atria are flanked by arcades which have stone tile flooring and walls with a stone base, wainscot and cap with plaster above. The plaster has decorative elements including mouldings and fluted pilasters with Corinthian capitals supporting plaster cornices. Brass light fixtures are mounted to the pilasters. Ceilings in the arcades are painted plaster. Doorways in the arcade typically have original white oak trim and pediments and half lite wood doors.

Recommendations:

- These spaces generally retain their original layout and the historic materials are generally intact and in good condition. These spaces should be retained and/or restored. Areas of chipped or cracked stone should be repaired and historic materials and finishes should be retained. If in the future an opportunity arises to return the original basement corridor space to its original function and remove the office space, this should be done to restore the original character of the space.



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



- Paint sampling should be initiated in order to establish what original colors were used in these areas. Future repainting work should implement the historic paint scheme as revealed by the sampling.
- All work should be done in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and NPS Preservation Briefs.



Zone 2 Original Interior Circulation:
Basement corridor currently serving
as dining space associated with the
cafeteria



Zone 2 Original Interior Circulation:
First Floor corridor





Zone 2 Original Interior Circulation:
Second Floor corridor



Zone 2 Original Interior Circulation:
Lower half of the rotunda with the Allen
True murals at the First Floor



Zone 2 Original Interior Circulation:
Domed ceiling of the rotunda



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Zone 2 Original Interior Circulation:
Interior skylight at the top of the east
atrium



Zone 2 Original Interior Circulation:
West atrium



Zone 2 Original Interior Circulation:
Arcade adjacent to the atrium



Treatment Zone 3 – House & Senate Chambers and Supreme Court

Description:

The House and Senate Chambers are both double height spaces with a viewing gallery at the edge of the second level. The House Chamber is larger than the Senate but both spaces have the same general features and finishes. The main chamber floor is tiered, so it steps down toward the front of the room and is finished with carpet flooring. Historic wood desks are spaced along the tiers facing the front of the chambers where the historic wood podiums are mostly intact. The gallery floors are also tiered and carpeted. The walls have a wainscot above which acoustic tiles have been installed over the original plaster walls with decorative paint. At the main chamber level the wainscot is Rose Onyx and at the gallery level it is paneled wood. Pilasters are spaced along the walls and at the gallery level, light fixtures are mounted to the pilasters. Arched openings in the back of each chamber have been infilled with solid panels and glazing, except in the center archway which has a door that leads to the vestibule. There are original built-in benches at the walls on the sides and back of the main level in each chamber. Fixed seating has been installed on each tier at the gallery level. Both chambers have a plaster coffered ceiling with decorative beams. Originally there were large skylights with metal decorative panels in the center of the ceilings but these are currently covered by infill that matches the rhythm of the original ceiling. A large brass chandelier hangs in the center of each room and additional modern can light fixtures have been installed in the ceiling to supplement the loss of light from the skylight being covered over. The doors and windows have wood trim. The majority of the original doors are half lite, wood paneled doors. Over the years, many of the windows in the Senate Chamber, both interior and exterior, and one window in the House Chamber have been replaced with stained glass windows honoring important contributors to the State of Colorado.

The Supreme Court room is also a double height space but it does not have a gallery level. The floor slopes toward the front of the room and has carpet flooring. Rows of fixed seating have been installed facing the original wood podium and bench which sits on a raised platform at the front of the room. The walls are a stone wainscot with painted plaster walls above. Pilasters at the main level of the room have Corinthian capitals that support a cornice at the level of the third floor above which the walls are painted plaster with



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pilasters that support the cornice at the ceiling. The room has a coffered ceiling with shallow beams and a recessed rectangular center panel from which a brass chandelier is hung. Windows and doors have wood trim. Doors are paneled wood and some are half lite. Some of the windows have been replaced with stained glass, as in the Chambers.

Recommendations:

- These spaces generally retain their original layout and the historic materials are generally intact and in good condition. These spaces should be retained and/or restored. Areas of chipped or cracked stone and wood should be repaired and historic materials and finishes should be retained. A project is ongoing in the House and Senate Chambers to remove the acoustic tiles from the walls and ceilings install a material this more sympathetic to the original character of the space and still provide the necessary acoustic properties. The interior skylights will be restored as part of this project. This work is scheduled to be completed over the next two years.
- Paint sampling should be initiated in order to establish what original colors were used in these areas. Future repainting work should implement the historic paint scheme as revealed by the sampling.
- All work should be done in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and NPS Preservation Briefs.



Zone 3 House & Senate Chambers & Supreme Court: Looking toward the front of the House Chamber





Zone 3 House & Senate Chambers & Supreme Court: Looking toward the back of the House Chamber



Zone 3 House & Senate Chambers & Supreme Court: Looking toward the front of the Senate Chamber



Zone 3 House & Senate Chambers & Supreme Court: Looking toward the back of the Senate Chamber



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Zone 3 House & Senate Chambers & Supreme Court: Supreme Court

Treatment Zone 4 –Office Space

Description:

Many of the office spaces throughout the building have been modified over the years to accommodate more offices or changing functions. As such, much of the original layout has been altered, however many of the original features and finishes are intact and are visible behind, above or inside of the changes that have been made.

The majority of the office space has carpet flooring, gypsum board or plaster walls, wood base and plaster or acoustic tile ceilings. Original door and windows openings have the original wood trim and many of the historic wood paneled doors are intact. Original steel vault doors and frames are intact in some locations. New doors are typically wood and have wood frames and trim. Most spaces have modern fluorescent light fixtures installed in them. New walls and partitions are typically gypsum board walls with wood or rubber base and do not match the original scale or quality of materials found in the original walls.



Recommendations:

- Some of the office spaces have been altered from their original layout and some finishes have been altered but in general the space retains its original character and many of the finishes. Office space should be treated as a rehabilitation zone so original materials and original spatial layouts should be retained and where possible restored. Where possible, modern partitions, doors and finishes should be removed or replaced with more compatible materials and finishes.
- Elements that are especially important to retain in these spaces are the original wood trim and base and original doors. When light fixtures are replaced, the new fixtures should be in keeping with the historic character of the building. If further alterations are undertaken in these spaces, design consideration should be made to minimize the amount of additional alterations to the original character of the space. Consideration should be given to the use of finishes and partition systems that are “reversible” and not permanently attached to the original finishes. Floor to ceiling partitions should be avoided if possible.
- All work should be done in compliance with the Secretary of the Interior’s Standards for the Treatment of Historic Properties and NPS Preservation Briefs.



Zone 4 Office Space: Office space with historic wood window trim intact



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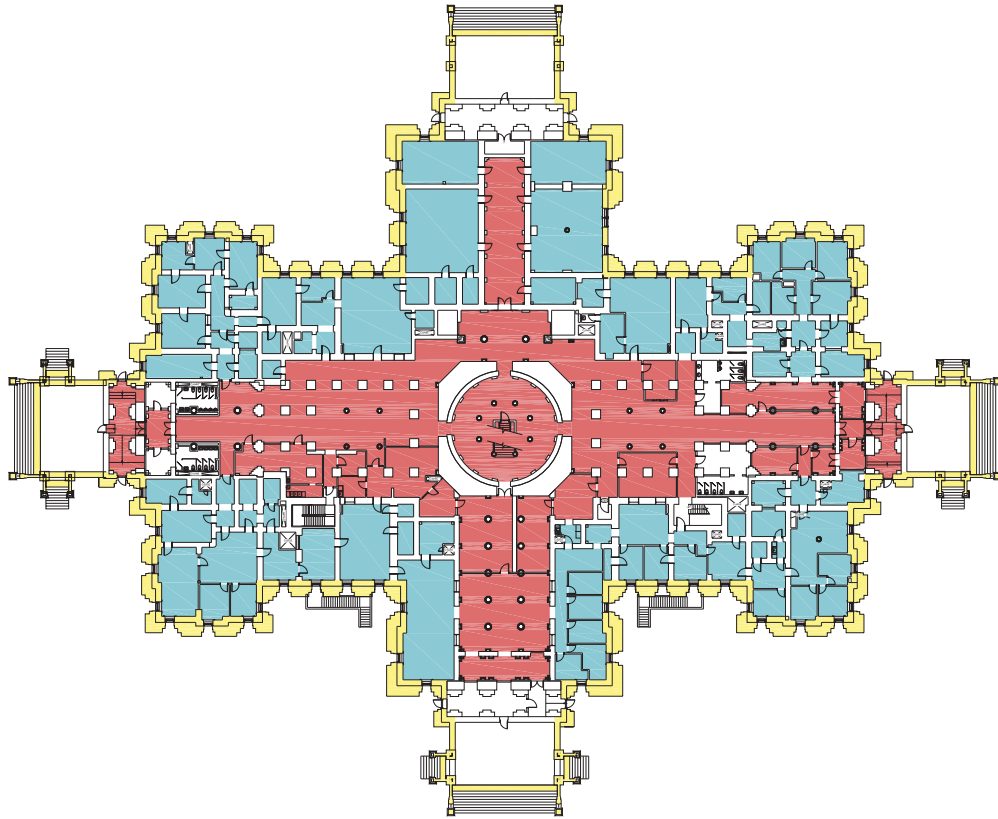


Zone 4 Office Space: Modern dividing wall in an office with historic wood doors, transoms, and trim visible in the background



Zone 4 Office Space: Historic vault door extant an office





1 BASEMENT ZONING PLAN
1/64" = 1'-0"

LEGEND

- Exterior Facade
- Original Interior Circulation
- House & Senate Chambers & Supreme Court
- Office Space

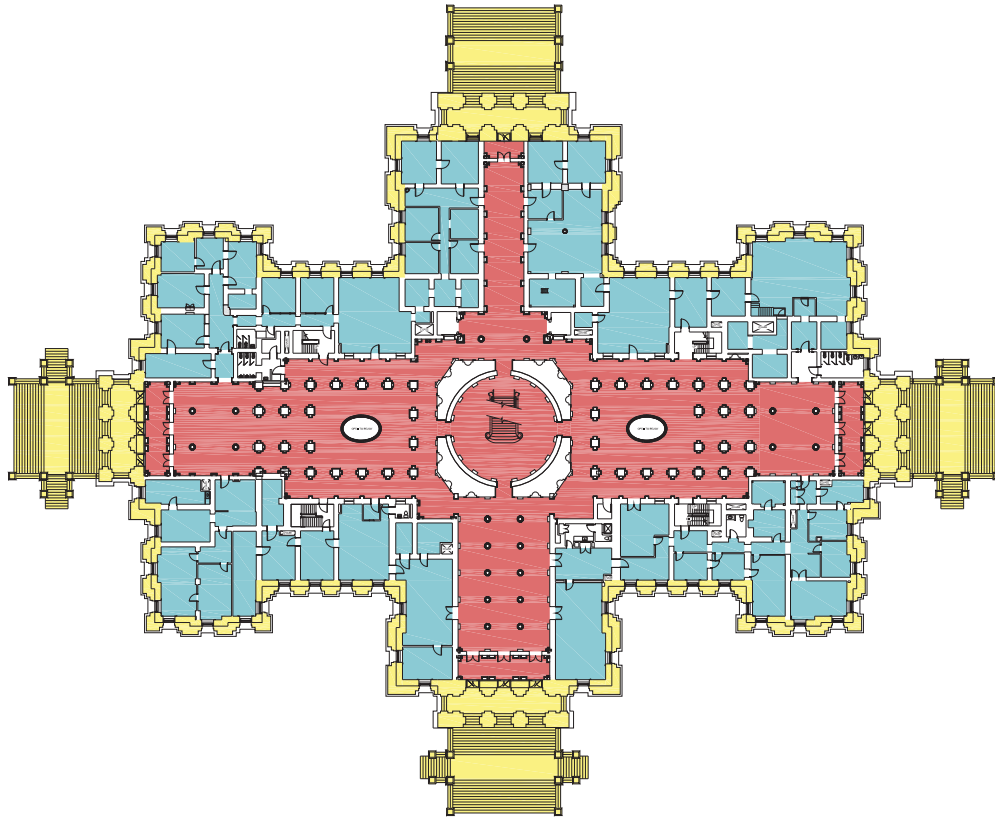
Project No.	2013490
Issue	ZONING PLAN
Date	01.30.2014
Drawn by	DCA
Checked by	DCA
Scale	1/64" = 1'-0"

Capitol Complex Master Plan
Colorado State Capitol
 1341 Sherman Street, Denver, CO 80203

Anderson Hallas Architects, PC
Sheet No. A1.0



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



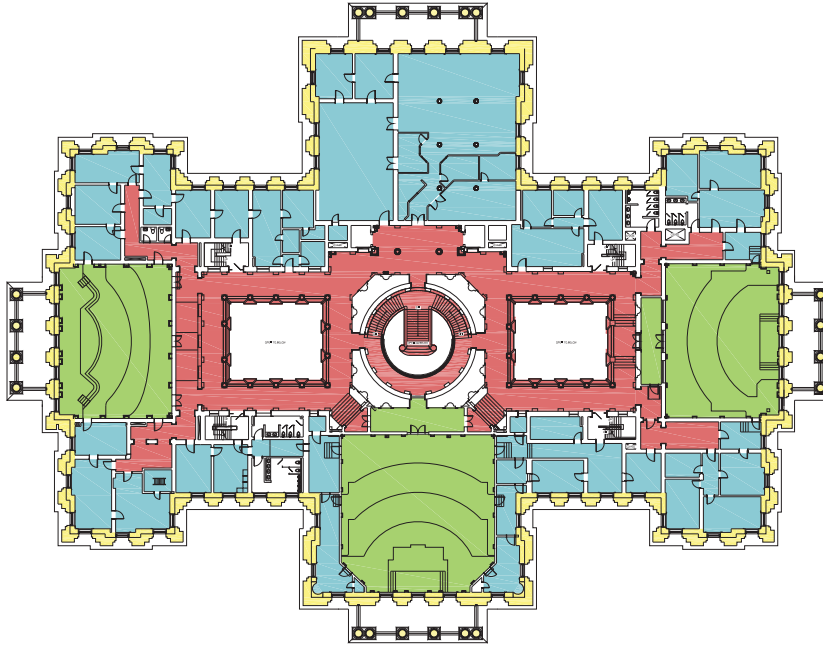
1 FIRST FLOOR ZONING PLAN
1/64" = 1'-0"

LEGEND

- Exterior Facade
- Original Interior Circulation
- House & Senate Chambers & Supreme Court
- Office Space

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1 SECOND FLOOR ZONING PLAN
1/64" = 1'-0"

LEGEND

- Exterior Facade
- Original Interior Circulation
- House & Senate Chambers & Supreme Court
- Office Space

Project No.	2013490
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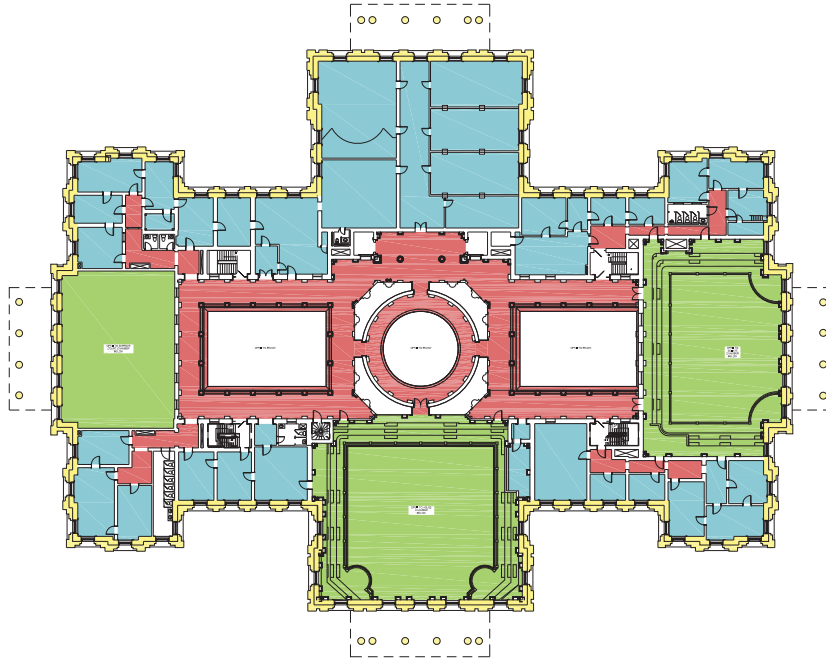
Capitol Complex Master Plan
Colorado State Capitol
 1341 Sherman Street, Denver, CO 80203

Anderson Hallas
 Architects, PC
 Sheet No.

A1.2



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



1 THIRD FLOOR ZONING PLAN
1/64" = 1'-0"

LEGEND

- Exterior Facade
- Original Interior Circulation
- House & Senate Chambers & Supreme Court
- Office Space

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="font-size: small;">Project No.</td><td>2013490</td></tr> <tr><td style="font-size: small;">Issue</td><td>ZONING PLAN</td></tr> <tr><td style="font-size: small;">Date</td><td>01.30.2014</td></tr> <tr><td style="font-size: small;">Drawn by</td><td>DCA</td></tr> <tr><td style="font-size: small;">Checked by</td><td>DCA</td></tr> <tr><td style="font-size: small;">Scale</td><td>1/64" = 1'-0"</td></tr> </table>	Project No.	2013490	Issue	ZONING PLAN	Date	01.30.2014	Drawn by	DCA	Checked by	DCA	Scale	1/64" = 1'-0"	<h2 style="margin: 0;">Capitol Complex Master Plan</h2> <h3 style="margin: 0;">Colorado State Capitol</h3> <p style="margin: 0;">1341 Sherman Street, Denver, CO 80203</p>	<p style="font-size: small;">Anderson Hallas Architects, PC</p> <p style="font-size: x-small;">Sheet No.</p> <h1 style="margin: 0;">A1.3</h1>
Project No.	2013490													
Issue	ZONING PLAN													
Date	01.30.2014													
Drawn by	DCA													
Checked by	DCA													
Scale	1/64" = 1'-0"													





3.1 FINDINGS AND RECOMMENDATIONS

3.1-A CODE ISSUES

See 2.1-B Code Issues

3.1-B GENERAL ACCESSIBILITY ISSUES

See 2.1-C General Accessibility Issues

3.1-C ARCHITECTURAL FINISHES AND INTERIOR COMPONENTS

General Architecture Findings

The State Capitol is a significant part of the Denver Civic Center District, which was added to the U.S. Register of National Historic Places on February 27, 1974, and is widely recognized as one of the most important historic and cultural resources in Colorado. The State Capitol Building is cruciform in plan with intersecting circulation axes running north/south and east/west. There is a central rotunda, with a grand staircase, open to the covered dome above. The wings and perimeter areas of the building house office spaces and legislative assembly spaces and hearing rooms. The major legislative spaces include the old Supreme Court Chambers in the north wing, the offices of the General Assembly in the east wing, the House of Representatives Gallery in the west wing, and the Senate Gallery in the south wing.

The historic interior finishes throughout the central areas of the building include white Colorado Yule marble floors, Beulah rose onyx wainscoting, white oak doors and decorative trim, brass railings, and bronze doorknobs. The office and assembly spaces typically have carpet flooring throughout. It was reported that rehabilitation/restoration of the interior hallways is on



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



the Capitol Complex list of controlled maintenance projects that need to be addressed.

We assessed the restrooms in the State Capitol that were included in the site survey visit. It is our understanding that the majority of the restrooms throughout the building are for private use by building occupants only. It was reported at the time of the site survey visit that there is a project underway to assess the restrooms and to develop a plan for renovations and for making the restrooms throughout compliant with accessibility requirements.

It was reported that there are heating and cooling issues at the north building entrance on the Basement Floor and that the area experiences freeze/thaw cycles.

It was reported that asbestos and lead paint are present throughout the building. It was further reported that the interior of the roof deck is sprayed with an asbestos-containing layer. All asbestos within the building should be abated and all personnel should be removed from affected areas during abatement. Sampling for lead paint must be completed prior to sanding any surfaces to be painted.

Note: As an historic property, the State Capitol Building and surrounding grounds should comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and the National Park Service (NPS) Preservation Briefs.



View of the ceiling from the interior of the Capitol Dome.





Grand stairway in the central rotunda.



View of the central rotunda, open to a domed ceiling above.



View of the domed ceiling above the central rotunda.



View of a central circulation arcade.



View of the central circulation arcade balconies at the Second and Third Floors.



Stained glass artwork found throughout the building.





Vaulted ceiling with skylights above the central circulation arcades.



Old Supreme Court Chambers located in the north wing.



House of Representatives Gallery located in the west wing.





Senate Gallery located in the south wing.

Ceiling Finishes

The Capitol Dome restoration project was in progress at the time of the site survey visit. The coffered ceiling with cementitious plaster appeared to be in good condition as observed from the floor below. It is our understanding that any issues with the domed ceiling will be addressed as part of the restoration project.

The plaster ceilings throughout the central arcades and circulation corridors and throughout the stairways included in the site survey visit appeared to be in fair condition overall. There were cracks noted in spots around the building, with the majority observed on the Third Floor.

The legislative chambers have coffered plaster ceilings that appear to be in fair condition overall. The Senate Gallery and House of Representatives Gallery have 1x1 acoustic tiles that appear to be glued to the flat coffered areas of the ceiling. It was reported that these tiles have not been tested for asbestos. It was further reported that there is a restoration project planned for the Senate Gallery and the House of Representatives Gallery that will include the removal of the 1x1 acoustic tiles from the ceilings and walls. This project is reported to include the installation of a more historically appropriate material that will provide the desired acoustic qualities following the removal of the existing tiles.

The offices that were included in the site survey visit were noted to have either plaster ceilings or 2x2 acoustic ceiling tiles. The plaster ceilings appeared to be in fair condition throughout. The 2x2 acoustic ceiling tiles appeared to be in fair condition with general soiling noted around the air diffusers (see Fig. 3.1.C.1).

The restrooms that were included in the site survey visit were noted to have either plaster ceilings or 2x2 acoustic ceiling tiles. The plaster ceilings



appeared to be in fair condition throughout. The 2x2 acoustic ceiling tiles appeared to be in fair condition throughout.

The Legislative Council Research Library located in the west wing on the Basement Floor appears to have newer finishes. The 2x2 acoustic ceiling throughout appears to be in good condition.

The granite cladding on the ceilings of the entrance vestibules on the north, west, and south sides of the Basement Floor appears to be in fair condition overall. The granite cladding on the ceilings of the west and south vestibules on the Basement Floor were noted to have evidence of water damage (see Fig. 3.1.C.2 and Fig. 3.1.C.3).

The 2x2 acoustic ceiling tile throughout Mr's Brown's Attic, on the Attic Floor, appears to be newer and in good condition overall.

The ceilings throughout the Sub-basement Floor appear to consist of areas of concrete and areas of masonry. Deterioration and water damage were noted throughout, including the storage area being used for archived statutes, session laws, and Court of Appeals history documents from the early years of Colorado (see Fig. 3.1.C.4, Fig. 3.1.C.5, and Fig. 3.1.C.6). It was reported that the archive and document storage area mentioned above also has an issue with being hot and humid and has resulted in the growth of mold on some of the documents. The vaulted masonry ceiling observed in the areas of the tunnels included in the site survey visit were noted to be in especially poor condition with evidence of corrosion and with paint generally observed to be peeling off of the masonry (see Fig. 3.1.C.7 and Fig. 3.1.C.8).



Fig. 3.1.C.1 Soiling of the acoustic ceiling tiles near air diffusers.





Fig. 3.1.C.2 Water damage noted at the granite cladding on the ceiling of the west emergency exit vestibule on the Basement Floor.



Fig. 3.1.C.3 Water damage noted at the granite cladding on the ceiling of the south accessible entrance vestibule on the Basement Floor.



Fig. 3.1.C.4 Evidence of water damage noted in the archive and document storage area on the Sub-basement Floor.





Fig. 3.1.C.5 Areas of deteriorating masonry noted at the ceiling on the Sub-basement Floor.



Fig. 3.1.C.6 Evidence of water damage noted at the ceiling on the Sub-basement Floor.



Fig. 3.1.C.7 Evidence of water damage, corrosion, and deterioration at the vaulted masonry ceilings of the areas of the tunnels included in the site survey visit.





Fig. 3.1.C.8 Evidence of water damage, corrosion, and deterioration at the vaulted masonry ceilings of the areas of the tunnels included in the site survey visit.

Wall Finishes

The Capitol Dome restoration project was in progress at the time of the site survey visit. The plaster and trim noted around the interior walls of the Dome appeared to be in good condition as observed from the floor below. It is our understanding that any issues with the walls will be addressed as part of the restoration project.

The plaster or gypsum board walls throughout the central arcades and circulation corridors, legislative chambers, offices, restrooms, Joint Legislative Library, stairways, Mr. Brown's attic, and areas of the Sub-basement Floor included in the site survey visit appeared to be in fair condition overall. There were cracks noted in areas around the building, with the majority observed on the Third Floor (see Fig. 3.1.C.9). There was an area of damage noted in the northwest stairway between the Basement Floor and the Sub-basement Floor (see Fig. 3.1.C.10). Damaged areas of the gypsum board walls were observed throughout the Sub-basement Floor (see Fig. 3.1.C.11).

The decorative plaster elements observed at the walls, columns, pilasters, cornices, mouldings, and elsewhere are in fair condition overall with some damage and deterioration noted throughout (see Fig. 3.1.C.12, Fig. 3.1.C.13 and Fig. 3.1.C.14).

The stone wainscoting on the walls of the central arcades and circulation



corridors, the main floor of the legislative chambers, the Joint Legislative Library, the stairways, and other areas included in the site survey visit appeared to be in good to fair condition overall with some minor damage and deterioration noted (see Fig. 3.1.C.15 and Fig. 3.1.C.16). The wood wainscoting around the walls of the legislative chambers at the balcony-level and the wood trim throughout are in generally fair condition overall with some damage and deterioration noted (see Fig. 3.1.C.16 and Fig. 3.1.C.17). It was reported that rehabilitation/repair/restoration of the woodwork is on the Capitol Complex list of controlled maintenance projects that need to be addressed.

The Senate Gallery and House of Representatives Gallery have 1x1 acoustic tiles glued to the walls that appear to be in fair condition overall, with general deterioration due to aging noted (see Fig. 3.1.C.18). It was reported that these tiles have not been tested for asbestos. It was further reported that there is a restoration project planned for the Senate Gallery and the House of Representatives Gallery that will include the removal of the 1x1 acoustic tiles from the ceilings and walls. This project is reported to include the installation of a more historically appropriate material that will provide the desired acoustic qualities following the removal of the existing tiles.

The public accessible restrooms located on the Basement Floor have wall tile that is in generally fair condition overall with soiling noted throughout (see Fig. 3.1.C.19). A portion of the wall was observed to be damaged below a lavatory in the Women's Accessible Restroom on the Basement Floor (see Fig. 3.1.C.20).

The granite cladding on the walls of the entrance vestibules on the north, west, and south sides of the Basement Floor appeared to be in fair condition overall. The granite cladding on the walls of the west and south vestibules on the Basement Floor were noted to have evidence of water damage (see Fig. 3.1.C.21 and Fig. 3.1.C.22).

The brick walls throughout Mr. Brown's Attic, on the Attic Floor, are in fair condition overall with areas of missing mortar and damaged brick noted (see Fig. 3.1.C.23 and Fig. 3.1.C.24).

The masonry and stone walls throughout the Sub-basement Floor were noted to be deteriorating and damaged in a number of locations (see Fig. 3.1.C.25, Fig. 3.1.C.26 and Fig. 3.1.C.27). There was also evidence of water damage noted at the walls in a number of locations throughout the sub-basement (see Fig. 3.1.C.28, Fig. 3.1.C.29, and Fig. 3.1.C.30).





Fig. 3.1.C.9 Cracking plaster noted in areas throughout the building, especially on the Third Floor.



Fig. 3.1.C.10 Area of damaged plaster or gypsum board noted in the northwest stairway between the Basement Floor and the Sub-basement Floor.



Fig. 3.1.C.11 Damaged gypsum board walls noted throughout the Sub-basement Floor.





Fig. 3.1.C.12 Typical damage and deterioration noted to the decorative plaster throughout.



Fig. 3.1.C.13 Typical damage and deterioration noted to the decorative plaster throughout.



Fig. 3.1.C.14 Damaged decorative plaster noted in the northwest stairway.



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS

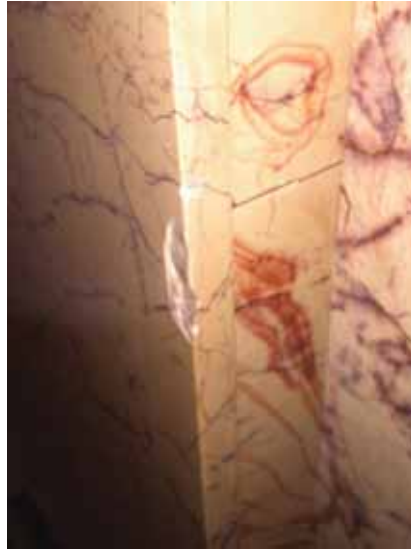


Fig. 3.1.C.15 Typical instance of damaged stone wainscoting observed during the site survey visit.



Fig. 3.1.C.16 Areas of damaged and deteriorating stone baseboard and wood wainscoting noted during the site survey visit.



Fig. 3.1.C.17 Areas of damaged wood wainscoting noted during the site survey visit.





Fig. 3.1.C.18 Acoustic tiles on the walls and ceilings of the Senate Gallery and House of Representatives Gallery.



Fig. 3.1.C.19 Generally soiled wall tile noted in the public accessible restrooms on the Basement Floor.



Fig. 3.1.C.20 Damage to the wall observed in the Women's Accessible Restroom on the Basement Floor.

3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 3.1.C.21 Water damage noted at the granite cladding on the walls of the west emergency exit vestibule on the Basement Floor.



Fig. 3.1.C.22 Water damage noted at the granite cladding on the walls of the south accessible entrance vestibule on the Basement Floor.



Fig. 3.1.C.23 Deteriorating mortar noted at the brick walls observed in Mr. Brown's Attic.





Fig. 3.1.C.24 Deteriorating and damaged brick walls observed in Mr. Brown's Attic.



Fig. 3.1.C.25 Damaged and deteriorating brick walls observed on the Sub-basement Floor.



Fig. 3.1.C.26 Spalling stone walls and deteriorating or missing mortar observed on the Sub-basement Floor.

3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 3.1.C.27 Spalling and deteriorating concrete walls observed on the Sub-basement Floor.



Fig. 3.1.C.28 Evidence of water damage noted in areas throughout the Sub-basement Floor.



Fig. 3.1.C.29 Evidence of water damage noted in areas throughout the Sub-basement Floor.





Fig. 3.1.C.30 Equipment located at a wall that appears to have issues with water infiltration and has been temporarily repaired in spots with a foaming waterproofing material.

Floor Finishes

The Capitol Dome restoration project was in progress at the time of the site survey visit. It is our understanding that any issues with the Dome flooring will be addressed as part of the restoration project.

The white marble flooring with the black stone border throughout the central arcades and circulation corridors, the public accessible restrooms on the Basement Floor, and the stone throughout the stairways is in generally fair condition overall with areas of soiling (see Fig. 3.1.C.31 and Fig. 3.1.C.32) and areas of cracked or deteriorating stone tiles noted (see Fig. 3.1.C.33, Fig. 3.1.C.34, Fig. 3.1.C.35, and Fig. 3.1.C.36). There were two metal valve wheels observed to be projecting above the marble flooring and creating a potential tripping hazard on the Second Floor outside of the Offices of the General Assembly (see Fig. 3.1.C.37). The black stone flooring throughout Mr. Brown's Attic appears newer and in generally good condition overall.

The carpet flooring throughout the legislative chambers appears to be in generally fair condition overall. The carpet flooring in the Joint Legislative Library appears newer and in good condition overall. The carpet flooring throughout the majority of the office spaces included in the site survey visit is in fair to poor condition overall with areas of wear-and-tear, areas of soiling, and areas where the carpet is coming loose and creating a potential tripping hazard noted throughout (see Fig. 3.1.C.38, Fig. 3.1.C.39, and Fig. 3.1.C.40). There is a threshold which is coming loose and creating a potential tripping hazard that was observed during the site survey visit (see Fig. 3.1.C.41). There are electrical cords and cables that have been run loosely across the main floors of the Old Supreme Court Chambers and are creating a potential tripping hazard (see Fig. 3.1.C.42 and Fig. 3.1.C.43). There are round access panels noted at the carpet flooring and the laminate



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



or vinyl hardwood flooring in the Offices of the General Assembly on the Second Floor which are creating a potential tripping hazard (see Fig. 3.1.C.44 and Fig. 3.1.C.45). It was reported that replacement of the carpet is on the Capitol Complex list of controlled maintenance projects that need to be addressed.

The floor tile in the Men's Restroom in the southeast corner of the Second Floor was observed to be in generally fair condition with soiling noted (see Fig. 3.1.C.46).

The concrete floors throughout the Sub-basement Floor were noted to be in generally fair to poor condition overall with areas of deterioration and damage observed throughout (see Fig. 3.1.C.47 and Fig. 3.1.C.48). There were a few areas noted to be missing concrete pavers (see Fig. 3.1.C.49). There was also standing water observed at the concrete flooring in areas throughout the Sub-basement Floor along with evidence of water damage noted during the site survey visit (see Fig. 3.1.C.50).



Fig. 3.1.C.31 Areas of soiled stone flooring noted throughout.

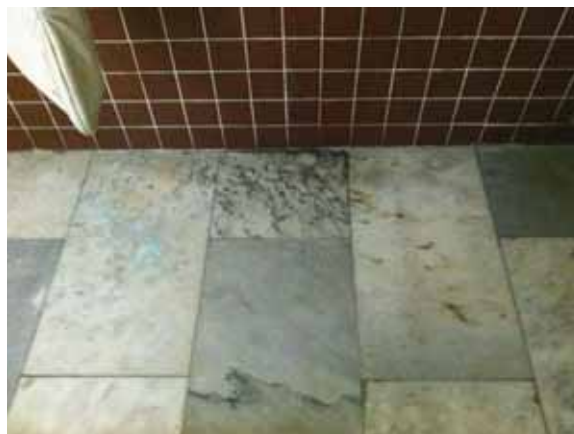


Fig. 3.1.C.32 Soiled stone flooring noted in the public accessible restrooms on the Basement Floor.





Fig. 3.1.C.33 Typical deterioration of the marble flooring observed throughout.



Fig. 3.1.C.34 Cracked and scuffed marble flooring.



Fig. 3.1.C.35 Cracked and deteriorating black stone flooring border.



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 3.1.C.36 Cracked stone flooring observed in the northwest stairway.



Fig. 3.1.C.37 Two metal valve wheels projecting above the marble flooring and creating a potential tripping hazard on the Second Floor outside of the Offices of the General Assembly.



Fig. 3.1.C.38 Areas of soiling and deteriorating carpet observed in the office areas included in the site survey visit.





Fig. 3.1.C.39 Areas of carpet coming loose and creating a potential tripping hazard.



Fig. 3.1.C.40 Areas of carpet flooring observed to be coming loose along the perimeter of the floor.



Fig. 3.1.C.41 A threshold coming loose and creating a potential tripping hazard noted during the site survey visit.

3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 3.1.C.42 Electrical cords running loosely across the floor of the Old Supreme Court Chambers and creating a potential tripping hazard.



Fig. 3.1.C.43 Electrical cords running loosely across the floor of the Old Supreme Court Chambers and creating a potential tripping hazard.



Fig. 3.1.C.44 Round panel noted at the carpet flooring in the Offices of the General Assembly on the Second Floor.





Fig. 3.1.C.45 Round panel noted at the laminate or vinyl hardwood flooring in the Offices of the General Assembly on the Second Floor.



Fig. 3.1.C.46 Generally soiled floor tile observed in the Men's Restroom in the southeast corner of the Second Floor.



Fig. 3.1.C.47 Spalling and deteriorating concrete flooring with the paint wearing off observed on the Sub-basement Floor.



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 3.1.C.48 Areas of cracked concrete flooring observed throughout the Sub-basement Floor.



Fig. 3.1.C.49 Missing concrete pavers observed in a few locations throughout the Sub-basement Floor.



Fig. 3.1.C.50 Standing water observed in a few locations throughout the Sub-basement Floor.



Other

The white oak doors throughout are in generally good to fair condition overall. A few of the doors were observed to have areas of minor damage and general wear-and-tear and some tarnishing was observed at a few of the historic door knobs (see Fig. 3.1.C.51 and Fig. 3.1.C.52). There is a wood railing in the room located at the southeast corner of the Senate Gallery with minor damage and wear-and-tear observed during the site survey visit (see Fig. 3.1.C.53). The wood shutters at the windows are in generally fair condition overall with some areas of minor damage and general wear-and-tear noted (see Fig. 3.1.C.54). It was reported that rehabilitation/repair/restoration of the doors is on the Capitol Complex list of controlled maintenance projects that need to be addressed.

The brass railings throughout the circulation corridors are in fair condition overall with areas of tarnishing noted (see Fig. 3.1.C.55).

There is an exposed bundle of cables that has been run along the base of a wall in a room adjacent to the Senate Gallery (see Fig. 3.1.C.56).

The countertop in the Men's Restroom in the southeast corner of the Second Floor was observed to be aging and worn with areas of damage noted (see Fig. 3.1.C.57).

There is a concrete stairway leading from the south tunnel up to the main floor of the sub-basement which has spalling along the edge of a step and has resulted in a loose railing (see Fig. 2.1.B.10 in 2.1-B Code Issues).



Fig. 3.1.C.51 General wear-and-tear noted at the white oak doors.



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Fig. 3.1.C.52 Areas of tarnishing noted at the historic door knobs.



Fig. 3.1.C.53 Damage noted at the wood railing in the room located at the southeast corner of the Senate Gallery.



Fig. 3.1.C.54 General wear-and-tear noted at the wood shutters.





Fig. 3.1.C.55 Areas of tarnishing noted at the brass railings throughout.



Fig. 3.1.C.56 A bundle of exposed cables run along the base of a wall in a room adjacent to the Senate Gallery.



Fig. 3.1.C.57 Countertop in the Men's Restroom in the southeast corner of the Second Floor noted to be aging and worn.

3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



Recommendations:

- See 3.0-A Historic Overview for character defining elements of the building and site. All restoration work involving character defining elements of the building and site should be in keeping with the historic status of the State Capitol Building.
- Asbestos is reported to be present throughout the building and tunnels. Abate all existing asbestos.
- Repair or replace any cracked or otherwise damaged plaster or gypsum board ceilings and walls throughout, especially on the Third Floor.
- Continue with the plan to remove and replace the 1x1 acoustic tiles on the ceilings and walls of the Senate Gallery and the House of Representatives Gallery.
- Replace any soiled or damaged 2x2 acoustic ceiling tiles throughout.
- Clean the granite cladding on the ceilings and walls of the Basement Floor entry vestibules on the west and south sides of the building. Determine the cause of the water damage and repair as necessary.
- Repair or replace any damaged ceilings and walls throughout the Sub-basement and tunnels, adding waterproofing as necessary. Determine the cause of any water damage throughout, particularly in the storage area for archived statutes, session laws, and Court of Appeals history documents, and repair as necessary. Consider moving archived documents to a more appropriate storage location to preserve and protect items related to Colorado's history.
- Repair or replace any damaged decorative plaster elements found on the walls, columns, pilasters, cornices, mouldings, or other locations throughout the building.
- Clean, repair, or replace any soiled or damaged stone wainscoting and trim on the walls throughout.
- Refurbish or replace any worn or damaged wood wainscoting and wood trim throughout.
- Clean any soiled wall and floor tile in the restrooms throughout.
- Repair or replace any damaged wall tile in the restrooms throughout, including the damage noted in the Women's Accessible Restroom on the Basement Floor.



- Continue with the plan to renovate and to make all restrooms throughout the building compliant with accessibility requirements. Repair or replace any worn and damaged finishes as necessary, including the countertop in the Men's Restroom in the southeast corner of the Second Floor.
- Repair or replace any damaged brick on the walls throughout Mr. Brown's Attic and tuck point throughout.
- Clean and refinish any soiled stone flooring and stair treads throughout.
- Repair or replace any damaged stone flooring and stair treads throughout.
- If possible, remove the two metal valve wheels projecting up from the marble flooring on the Second Floor outside of the Offices of the General Assembly. If the valve wheels need to remain, install a code-compliant barrier around the wheels. *Note: it was reported in April of 2014 that the two metal valve wheels are steam and condensate shut-off valves which need to be replaced, along with the associated pipes, and easy access needs to be provided to the new shut-off valves.
- Replace all carpet throughout the office areas, with the exception of the Joint Legislative Library and any other spaces with newer carpet in good condition.
- Repair or replace any flooring thresholds that are damaged or are no longer securely attached to the floor.
- Remove all potential tripping hazards throughout, including any raised floor receptacles or panels and the electrical cords running across the floor of the Old Supreme Court Chambers noted above.
- Repair or replace any spalling or otherwise damaged concrete flooring throughout the Basement Floor. Determine the cause of any water damage and repair as necessary.
- Install concrete pavers where not currently provided throughout the Sub-basement Floor.
- Refurbish any interior doors and door frames with damage or wear-and-tear and replace all knob-style door handles if allowed per historic designation guidelines. Refurbish any tarnished historic door handles to remain.



3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS & RECOMMENDATIONS



- Repair or replace any wood handrails with damage or wear-and-tear throughout.
- Repair or replace any wood shutters with damage or wear-and-tear throughout.
- Refurbish the brass railings throughout the circulation corridors, to include the removal of any tarnishing that has developed.
- Replace any floor receptacles or panels that are creating a tripping hazard with new receptacles per electrical and building codes.
- In regards to the exposed bundles of cables noted above, refer to Section 2.5-A Overview of Existing Voice and Data Systems for general recommendations applicable to routing cabling.
- Repair or replace the spalled concrete step located on the stairway leading from the south tunnel to the main floor of the sub-basement and reattach the handrail.



3.1-D STRUCTURAL

Many cracks were observed along the interior walls throughout the Third Floor. The cracks typically propagate from corners and doorways and are likely caused by normal settling and movement of the structure as well as renovations over the life of the building. The cracks do not present a cause for concern at this time. See section 2.2 for structural observations and recommendations for all floors.



3.1-E VOICE AND DATA

Refer to Section 2.5-A for IT/Telecom Infrastructure general recommendations, as applicable to each floor.





3.1-F SECURITY SYSTEMS

The lobby entry must be provided with a staffed security/reception desk.
Card reader access control required for staff suite entry doors on all floors.
Refer also to Section 2.6-A for Security System general recommendations,
as applicable to each floor.





4.0 LEVELS OF RENOVATION NEEDED

Building: Colorado State Capitol Building, 200 East Colfax Avenue (Denver)					
Priority	Main System	Sub System	Level of Renovation Needed		
			Minimal	Moderate	Extensive
1	Exterior Enclosure	Windows			√
1	Exterior Enclosure	Roof			√
1	Exterior Enclosure	Walls			√
1	Exterior Enclosure	Sealant / Grout			√
1	Exterior Enclosure	Signage			√
1	Exterior Enclosure	Tunnel - structural			√
1	Infrastructure	Tele/Com			√
1	Interior	ADA-Restrooms			√
1	Infrastructure	Plumbing		√	
1	Site	Pavement		√	
2	Code	Exit Stairways		√	
2	Exterior Enclosure	Fall Protection (roof)		√	
2	Infrastructure	Fire Sprinkler		√	
2	Infrastructure	Security Access/IDS		√	
2	Infrastructure	Security Video		√	
2	Interior	Finishes - Flooring		√	
2	Interior	ADA-Drinking Fountains		√	
2	Interior	ADA-Door Levers		√	
3	Exterior Enclosure	Doors	√		
3	Infrastructure	HVAC	√		
3	Infrastructure	Power	√		
3	Infrastructure	Lighting	√		
3	Infrastructure	Fire Alarm	√		
3	Infrastructure	Structural Framing	√		
3	Interior	Finishes Ceiling	√		
3	Interior	Finishes - Wall	√		
3	Interior	Doors	√		
3	Site	Lighting	√		
	Code	Exits			
	Code	Dead End Corridors			
	Environmental	Asbestos	(present, per Owner)		
	Exterior Enclosure	Penthouse			
	Infrastructure	Elevator(s)		(unknown)	
	Interior	ADA-Sinks (Break Rooms)		(unknown)	
	Site	Drainage			
	Site	Utilities			



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5.0 COST ESTIMATES

SUMMARY OF SUMMARIES

Item No.	Description	SF	Total	\$/SF
1	200 E. Colfax - State Capitol	323,813	54,959,330	169.73
2	Contingency on Above		w/ Above	
Subtotals:		323,813	54,959,330	170
3A	IT \ Teledata (Relocate Exstg Only)	53,308	264,215	4.96
3B	Move Management		See Add Alternate	
3C	Public Art	323,813	636,138	1.96
4	Contingency on Above		Excluded	
Equipment \ Art Subtotal:			900,353	2.78
Base Price \ Equipment \ Art Subtotal:			55,859,684	173
5	Escalation - 6.75% per year		Excluded	
6	Contingency on Above		Excluded	
Escalation Subtotal:			Excluded	
Base Price \ Equipment \ Art Subtotal:			55,859,684	173
7	Design Fees at 8% per State of CO Standards		4,468,775	13.80
8	Contingency on Above		Excluded	
Design Fee Subtotal:			4,468,775	13.80
Base Price \ Equipment \ Art \ Design Fee Subtotal:			60,328,458	186

PROJECTED COST OF CONSTRUCTION IN 2014 DOLLARS	60,328,458	186
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ADD-ALTERNATE				
Item No.	Description	SF	Total	\$/SF
9	Move Management	323,813	231,013	0.71
10	Flex Space (Allowance)	100,000	3,500,000	35.00
11	FF&E (FF&E SF & \$25\SF Allowance per Architect)	53,308	1,332,700	25.00
12	Escalation - 6.75% per year		Excluded	
13	Contingency on Above		Excluded	
Subtotals:			5,063,713	
ADD-ALTERNATE SUBTOTAL:			5,063,713	16



10 YEAR PHASING

Item No.	Description	SF	Total	\$/SF
1A	Repair Short Tunnel Roof/Structural	323,813	11,764,925	36.33
1B	Escalation		Excluded	
System 1 Repair Tunnel Subtotal:			11,764,925	36
2A	Site Repairs: Sidewalk, Paving & Drainage	323,813	1,267,662	3.91
2B	Escalation		Excluded	
System 2 Site Repairs Subtotal:			1,267,662	4
3A	Replace Roof	323,813	2,873,728	8.87
3B	Escalation		Excluded	
System 3 Replace Roof Subtotal:			2,873,728	9
4A	Windows & Façade Restoration	323,813	10,467,816	32.33
4B	Escalation		Excluded	
System 4 Window & Façade Restoration Subtotal:			10,467,816	32
5A	Plumbing System Repair Replacement	323,813	6,190,182	19.12
5B	Escalation		Excluded	
System 5 Plumbing Replacement Subtotal:			6,190,182	19
6A	Balance of Scope in 2020 (based on 20% of Balance)	323,813	4,809,985	14.85
6B	Escalation		Excluded	
Balance of Scope in 2020 Subtotal:			4,809,985	15
7A	Balance of Scope in 2021 (based on 20% of Balance)	323,813	4,809,985	14.85
6B	Escalation		Excluded	
Balance of Scope in 2021 Subtotal:			4,809,985	15
8A	Balance of Scope in 2022 (based on 20% of Balance)	323,813	4,809,985	14.85
8B	Escalation		Excluded	
Balance of Scope in 2022 Subtotal:			4,809,985	15
9A	Balance of Scope in 2023 (based on 20% of Balance)	323,813	4,809,985	14.85
9B	Escalation		Excluded	
Balance of Scope in 2023 Subtotal:			4,809,985	15



5.0 COST ESTIMATES

10A	Balance of Scope in 2024 (based on 20% of Balance)	323,813	4,809,985	14.85
10B	Escalation		Excluded	
Balance of Scope in 2024 Subtotal:			4,809,985	15
10 yr Phasing Subtotal:			56,614,238	175
11	IT \ Teledata (Relocate Exstg Only)		264,215	0.82
12	Public Art		636,138	1.96
13	Contingency on Above		Excluded	
Equipment \ Art Subtotal:			900,353	3
Systems \ Equipment & Art Subtotal:			57,514,591	178
14	Design Fees at 8% per State of CO Standards		4,601,167	14.21
15	Contingency on Above		Excluded	
Design Fee Subtotal:			4,601,167	14
Base Price \ Equipment & Art \ Design Fee Subtotal:			62,115,759	192

PROJECTED COST OF CONSTRUCTION IN 2014 DOLLARS		62,115,759	192
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ADD ALTERNATE				
16	Move Management (5 moves)	323,813	1,155,063	3.57
17	Flex Space as required over 10 years (Allowance)	100,000	10,500,000	105.00
18	FF&E (FF&E SF & \$25/SF Allowance per Architect)	53,308	1,332,700	25.00
19	Escalation - 6.75% per year		Excluded	
20	Contingency on Above		Excluded	
Move Management Subtotal:			12,987,763	
Add Alternate Subtotal:			12,987,763	40.11



SYSTEM BY SYSTEM SUMMARY

Item No.	Description	SF	Total	\$/SF
1A	Repair Short Tunnel Roof/Structural	323,813	11,764,925	36.33
1B	Escalation to March 2017		Excluded	
System 1 Repair Tunnel Subtotal:			11,764,925	36
2A	Site Repairs: Sidewalk, Paving & Drainage	323,813	1,267,662	3.91
2B	Escalation to March 2018		Excluded	
System 2 Site Repairs Subtotal:			1,267,662	4
3A	Replace Roof	323,813	2,873,728	8.87
3B	Escalation to March 2019		Excluded	
System 3 Replace Roof Subtotal:			2,873,728	9
4A	Windows & Façade Restoration	323,813	10,467,816	32.33
4B	Escalation to March 2020		Excluded	
System 4 Window & Façade Restoration Subtotal:			10,467,816	32
5A	Plumbing System Repair Replacement	323,813	6,190,182	19.12
5B	Escalation to March 2021		Excluded	
System 5 Plumbing Replacement Subtotal:			6,190,182	19
6A	Balance of Project Scope	323,813	23,799,926	73.50
6B	Escalation to March 2022		Excluded	
System 6 Balance of Scope Subtotal:			23,799,926	73
System by System w/ Escalation Subtotal:			56,364,238	174
7	IT \ Teledata (Relocate Exstg Only)		264,215	0.82
8	Public Art		636,138	1.96
9	Contingency on Above		Excluded	
Equipment \ Art Subtotal:			900,353	3
Systems \ Equipment & Art Subtotal:			57,264,591	177
10	Design Fees at 8% per State of CO Standards		4,581,167	14.15
11	Contingency on Above		Excluded	
Design Fee Subtotal:			4,581,167	14
Base Price \ Equipment & Art \ Design Fee Subtotal:			61,845,759	191
PROJECTED COST OF CONSTRUCTION IN 2014 DOLLARS			61,845,759	191



5.0 COST ESTIMATES

ADD ALTERNATE				
12	Move Management	323,813	231,013	0.71
13	Flex Space (Allowance)	100,000	3,500,000	35.00
14	FF&E (FF&E SF & \$25\SF Allowance per Architect)	53,308	1,332,700	25.00
15	Escalation - 6.75% per year		Excluded	
16	Contingency on Above		Excluded	
Move Management Subtotal:			5,063,713	
Add Alternate Subtotal:			5,063,713	15.64



FF&E DETAILED ESTIMATE - BASE

Estimate By: Kyle Hoiland
 Date: 09-Jun-14
 Reviewed By: Chris Squadra
 Date: 09-Jun-14

Total Cost: **\$5,733,053**

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
FF&E					
	Employee Workstations (1 employee:250 sf) Minor Repair to Existing Only	53,308	SF	25.00	1,332,700
	Small Conference Rooms (1 small room:2,500 sf)				w/ Above
	Large Conference Rooms				w/ Above
SUBTOTAL FF&E					1,332,700

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
IT/Teledata					
	AV / IT @ Large Conference Rooms	8	EA	6,053.57	48,429
	VOIP Telephone System	340	EA	324.09	110,256
	PC Workstations (relocate existing only; see below)				Excluded
	CAT 6E Data Cabling	340	EA	310.20	105,531
	State of CO Servers, Routers, Wireless Access and IT Equipment not listed above				Excluded
SUBTOTAL IT/TELEDATA					264,215

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
Flex Space					
	Flex Space for Multiple Moves and/or Tenant Holdover (per floor)	100,000	RSF	35.00	3,500,000
SUBTOTAL MOVE LEASED SPACE					3,500,000

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
Public Art					
	Art in Public Spaces Allowance at 1.0% of Construction Cost	1	LS	636,138.00	636,138
SUBTOTAL PUBLIC ART					636,138

TOTAL COST -				5,733,053
				18

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
Move Management					
	Moving Labor, Material, Equipment & Supervision (2 Moves)	648	EA	281.27	182,260
	Relocate PC Workstations (2 Moves)	648	EA	75.24	48,753
SUBTOTAL MOVE MANAGEMENT					231,013



DETAILED ESTIMATE - SUMMARY

				323,813
Item No.	Description	\$/SF	Total	Total w/Burdens
DIV 2	EXISTING CONDITIONS	6.18	2,000,151	2,942,184
DIV 3	CONCRETE	0.50	163,500	240,505
DIV 4	STONE & MASONRY	3.50	1,132,500	1,665,886
DIV 5	METALS	1.32	426,400	627,226
DIV 6	WOODS & PLASTICS	4.58	1,482,860	2,181,258
DIV 7	THERMAL PROTECTION	10.49	3,397,304	4,997,368
DIV 8	OPENINGS, DOORS, WINDOWS	0.39	125,000	183,873
DIV 9	FINISHES	20.00	6,476,454	9,526,739
DIV 10	SPECIALITIES	0.30	96,940	142,597
DIV 11	EQUIPMENT		EXCLUDED	
DIV 12	FURNISHINGS	0.96	311,500	458,211
DIV 13	SPECIAL CONSTRUCTION		EXCLUDED	
DIV 14	CONVEYING SYSTEMS	0.01	2,500	3,677
DIV 21	FIRE SUPPRESSION	10.62	3,438,894	5,058,547
DIV 22	PLUMBING	11.63	3,767,132	5,541,379
DIV 23	HVAC	28.10	9,099,145	13,384,668
DIV 26	ELECTRICAL	13.71	4,439,476	6,530,384
DIV 27	COMMUNICATIONS	1.55	501,910	738,300
DIV 31	EARTHWORK		EXCLUDED	
DIV 32	EXTERIOR IMPROVEMENTS	1.55	500,704	736,526
DIV 33	UTILITIES		EXCLUDED	
DIV 34	TRANSPORTATION		EXCLUDED	
	Subtotal Direct Construction Costs	115.38	37,362,370	54,959,330
	Allowance for Historical / Memorial Markers		250,000	
	Direct Cost Subtotal with GFP	116.15	37,612,370	
	Material Testing	0.35%	131,643	
	Owner's Design & Preconstruction Contingency	10.00%	3,761,237	
	Owner's Construction Contingency (after NTP)	5.00%	1,880,619	
	Permits	1.90%	714,635	
	Total Direct Construction Costs	136.19	44,100,504	
	Standard General Conditions (GC's Onsite Overhead)		3,712,970	
	Subtotal NET Construction Cost	147.66	47,813,474	
	GC's Off-Site Overhead & Profit	4.60%	2,187,920	
	GC's General Liability Insurance	0.90%	430,321	
	Construction Cost w/o Bonds & Escalation	155.74	50,431,716	
	Builder's Risk Insurance	1.50%	752,726	
	Performance & Payment Bond	1.20%	602,181	
	Bid Bond	0.25%	125,454	
	Tap Fees		Excluded	
	Bidding Reserves		3,047,254	
	Total Estimated Cost of Construction	169.73	54,959,330	



DETAILED ESTIMATE

Estimate By: Kyle Hoiland
 Date: 16-Mar-14
 Reviewed By: Chris Squadra
 Date: 17-Mar-14

Building GSF: **323,813** Total Cost: **\$37,362,370**

DIV 02	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
EXISTING CONDITIONS / BUILDING DEMOLITION					
	Concrete Sawcutting	4,000	LF	5.00	20,000
	Remove Sections of C&G	500	LF	8.20	4,100
	Remove Sections of Sidewalk	1,000	SF	3.46	3,457
	Asbestos Abatement (Allowance)	323,813	SF	1.50	485,720
	Demo Building Interior as needed	323,813	SF	2.00	647,626
	Demolition Disposal & Dumping Fees	95,945	CY	3.40	326,212
	High Pressure Wash @ Exterior Building	106,000	SF	1.40	148,400
	Remove Existing Caulking at Exterior Building Joints	26,500	LF	2.50	66,250
	Remove & Salvage Doors (for Repair only)	500	EA	75.00	37,500
	Scaffolding (erect & dismantle)	1,060	CSF	198.95	210,887
	Remove Railings @ Interior Stairs	2,000	LF	25.00	50,000
SUBTOTAL EXISTING CONDITIONS/DEMOLITION					2,000,151

DIV 03	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
CONCRETE / FOUNDATIONS					
	Repair Concrete Cracking & Spalling @ Basement Slab & Stairs	10,000	SF	11.55	115,500
	Repair Concrete Cracking & Spalling @ Other Floors	10,000	SF	4.80	48,000
SUBTOTAL FOUNDATIONS					163,500

DIV 04	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
MASONRY					
	Exterior Stone Repair, where necessary	1	AL	1,000,000.00	1,000,000
	Recaulk Exterior Cut Stone Masonry Panels	26,500	LF	5.00	132,500
SUBTOTAL MASONRY					1,132,500

DIV 05	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
METALS					
	New Interior Guardrails	2,000	LF	128.20	256,400
	Interior Wall Grab Railings	2,000	LF	85.00	170,000
SUBTOTAL METALS					426,400

DIV 06	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
WOODS					
	Rough Carpentry Wood Materials	323,813	SF	0.75	242,860



5.0 COST ESTIMATES

	Rough Carpentry Labor	5,000	HRS	48.00	240,000
	<i>*Time & materials for miscellaneous building shoring, safety railings/barricades, blocking, substrate repairs</i>				
	Repair Existing Millwork Materials & Labor (Allowance)	1	AL	1,000,000.00	1,000,000
SUBTOTAL WOODS					1,482,860

DIV 07	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
THERMAL & MOISTURE PROTECTION					
	Water Leak Repairs (Allowance)	1	LS	2,873,728.00	2,873,728
	Metal Fascia, Flashings, & Trims				w/ Above
	Scuppers, Gutters & Downspouts				Excluded
	Insulation Repairs @ Impacted Areas	1	AL	10,000.00	10,000
	Miscellaneous Caulking & Sealants @ Interior	323,813	SF	1.20	388,576
	Miscellaneous Fireproofing Repair (Allowance)	50,000	SF	2.50	125,000
SUBTOTAL THERMAL					3,397,304

DIV 08	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
OPENINGS					
	Repair Doors (Allowance)	1	AL	75,000.00	75,000
	Repair Windows (Allowance)	1	AL	50,000.00	50,000
SUBTOTAL OPENINGS					125,000

DIV 09	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
INTERIOR FINISHES					
	Gyp Bd Wall Patching	356,194	SF	1.10	391,814
	Gyp Bd Ceiling Patching	106,858	SF	3.10	331,261
	ACT Ceiling Repair / Tile Replacement	106,858	SF	3.21	343,015
	Gyp Bd Detailing @ Int Soffits, Cols, etc.	1	LS	25,000.00	25,000
	Replace All Carpet	242,860	SF	3.28	796,580
	Clean/Repair Natural Stone/Tile Flooring	80,953	SF	20.00	1,619,065
	Repair/Replace VCT	3,238	SF	1.80	5,829
	Vinyl Base	60,950	LF	2.20	134,090
	Wall Coverings Repair / Replacement	117,544	SF	3.90	458,422
	Clean/Repair Natural Stone/Tile @ Walls	117,544	SF	12.40	1,457,547
	Paint Gyp Bd Walls & Ceilings w/2 Coats Latex	463,053	SF	0.60	277,832
	Miscellaneous Accent Painting Allowance	1	LS	25,000.00	25,000
	Refinish Repaired Millwork (Allowance)	1	AL	500,000.00	500,000
	Miscellaneous Paint Repair @ Exposed Structural Metal	30,000	SF	3.70	111,000
SUBTOTAL INTERIOR FINISHES					6,476,454

DIV 10	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
SPECIALITIES					
	Movable Office Partitions System				Excluded
	New Bath Hardware	1	AL	50,000.00	50,000
	Fire Extinguishers (2 per floor)	20	EA	175.00	3,500
	Corner Guards	200	EA	8.20	1,640
	Code Required Signage	250	EA	55.20	13,800
	Wayfinding Signage	1	AL	25,000.00	25,000
	Access Ladders	6	EA	500.00	3,000



SUBTOTAL SPECIALTIES				96,940
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DIV 11	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
EQUIPMENT					
	Refrigerator				Excluded
	Gas Range				Excluded
	Dishwasher				Excluded
	Microwave				Excluded
	Food Disposal				Excluded
	Appliance Installation				Excluded
	Accordion Wall Partitions				Excluded
	Kitchen & Food Service Equipment				Excluded
	Other Office Equipment Not Listed				Excluded
SUBTOTAL EQUIPMENT					EXCLUDED

DIV 12	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
FURNISHINGS					
	Entry Receptionist Desk Upgrade	1	AL	35,000.00	35,000
	Plastic Laminate Countertops Repairs	500	SF	28.00	14,000
	Solid Surface Countertops Repairs	2,500	SF	105.00	262,500
	Copy / Print / Mail Center Casework				w/ Div 6
	Kitchen / Break Room Casework				w/ Div 6
	Window Roller Blinds - no valances, installed				Excluded
	Display Cases				Excluded
	Marker Boards				Excluded
	Tackboards				Excluded
	Office Furnishings & Other Building FF & E				Excluded
SUBTOTAL FURNISHINGS					311,500

DIV 13	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
SPECIAL CONSTRUCTION					
	Alternative Energy Systems				Excluded
	Alternative Fuel Vehicle Fueling Stations				Excluded
SUBTOTAL SPECIAL CONSTRUCTION					EXCLUDED

DIV 14	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
CONVEYING SYSTEMS					
	Elevator Service Call - Verify Current Condition & Maintenance Plan	1	LS	2,500.00	2,500
SUBTOTAL CONVEYING SYSTEMS					2,500

DIV 21	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
FIRE SUPPRESSION					
	Fire Sprinklers - Full Replacement	323,813	SF	10.62	3,438,894
	Backflow Prevention				Excluded



5.0 COST ESTIMATES

FDC				Excluded
Booster Pump (Allowance)				Excluded
SUBTOTAL FIRE SUPPRESSION				3,438,894

DIV 22	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
PLUMBING					
	Demo Existing Plumbing	323,813	SF	2.00	647,626
	Plumbing Systems - Full Replacement	323,813	SF	8.63	2,794,506
	ADA Fixtures Allowance	1	AL	50,000.00	50,000
	Replace Standard Fixtures	1	AL	25,000.00	25,000
	Replace or Refinish Historical Fixtures	1	AL	250,000.00	250,000
SUBTOTAL PLUMBING					3,767,132

DIV 23	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
HVAC					
	HVAC - Full Replacement	323,813	SF	26.50	8,581,045
	HVAC - Add Heating Coil @ Penthouse				w/ Above
	HVAC - Workout Room				w/ Above
	Upgrade HVAC Controls	323,813	SF	1.60	518,101
SUBTOTAL HVAC					9,099,145

DIV 26	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
ELECTRICAL					
	Demo Existing Electrical	323,813	SF	2.00	647,626
	New Electrical Wiring & Conduit	323,813	SF	6.21	2,010,879
	Localized Light Controls	323,813	SF	2.00	647,626
	Remove Light Fixtures throughout Building	323,813	SF	1.00	323,813
	Replace Light Fixtures w/ LED	323,813	SF	2.50	809,533
	Emergency GenSet (50 kVA)				Excluded
	UPS System				Excluded
	Solar Photovoltaic System				Excluded
	Wind Turbine System				Excluded
	Lightning Protection System				Excluded
SUBTOTAL ELECTRICAL					4,439,476

DIV 27	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
DATA / COMMUNICATIONS					
	Fire Alarm System	323,813	SF	0.92	297,908
	Data & Communications Conduit	323,813	SF	0.63	204,002
	Data & Communications Equipment				Excluded
	A/V Equipment				Excluded
SUBTOTAL COMMUNICATIONS					501,910



DIV 032	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
SITE IMPROVEMENTS					
	Paving				
	Replace Existing Asphalt Road around Bldg	107,000	SF	3.61	386,484
	Concrete Sidewalks - Seal Cracks	2,500	LF	6.00	15,000
	New 6" x 18" F.R. Concrete Curb & Gutter	1,000	LF	36.23	36,230
	New 4" Sidewalk	3,000	SF	6.33	18,990
	Landscape				
	Fine Grade Topsoil	10,000	SF	2.00	20,000
	Sod Repair	25,000	SF	0.56	14,000
	Irrigation Repair	1	AL	10,000.00	10,000
SUBTOTAL SITE IMPROVEMENTS					500,704

DIV 33	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
SITE CIVIL/MECHANICAL UTILITIES					
	Secondary Utilities to Building				
	2" Copper Water Line (Incl. Valves, Connections, Trenching w/ Bedding)				Excluded
	6" Sewer Service				Excluded
	Gas Line Trenching				Excluded
	Electrical Service				Excluded
	Phone & Data Service Trenching				Excluded
SUBTOTAL SITE CIVIL/MECHANICAL UTILITIES					EXCLUDED

TOTAL COST -					37,362,370
					115

