CAPITOL COMPLEX MASTER PLAN

FINDINGS & RECOMMENDATIONS (F & R) NEEDS ASSESSMENT

STATE SERVICES BUILDING, 1525 SHERMAN STREET (DENVER)

NOVEMBER 2014

RNL

FINDINGS & RECOMMENDATIONS (F&R) NEEDS ASSESSMENT

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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 Services Building at 1525 Sherman Street 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), 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.

In general the building is in fair condition. A fair condition rating refers to the fact that the State Services 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 fire alarm. This recommendation encompasses life safety issues and is due to fire protection code issues and the age of the system.

   High Level Cost Estimate: $643,728

2. Replace engine generator. This recommendation encompasses life safety issues and is per the State's 5 year maintenance plan.

   High Level Cost Estimate: $161,301

3. Insulate exterior walls. This recommendation encompasses loss of use/reliability issues and overall energy efficiency issues.

   High Level Cost Estimate: $1,188,172

4. 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: $638,206

5. Repair/replace exterior sealant. This recommendation encompasses loss of use/reliability issues and is due to the overall deterioration of the sealant which is creating access points by which water can penetrate the building envelope.

   High Level Cost Estimate: $569,715

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

$10,168,019

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:

$10,438,019

1.0 OVERVIEW

1.0-A ARCHITECTURE OVERVIEW

The State Services Building was constructed from 1958 to 1960 and is located in Denver's North Capitol Hill Neighborhood on the northwest corner of Sherman Street and East Colfax Avenue. The Modern style building was designed by G. Meredith Musick & Clayton C. Musick and T. H. Buell & Co., Associated Architects and constructed by Mead & Mount Construction Company. The building's current and historic functions are to serve as government office space for the State of Colorado.

The building was renovated and rededicated in August of 1992. The building was undergoing an interior renovation project on the First Floor through the Seventh Floor on the date of the site visit. The State Services Building is a concrete and steel construction with a dark grey granite foundation and polished white marble cladding on the walls. This seven-story building, with a basement and sub-basement, grosses 165,930 square feet of space.

The architectural assessment of the State Services Building at 1525 Sherman Street 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 September 24, 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. There are issues related to non-renovated interior finish materials, exterior finish materials, building systems, code compliance, accessibility, potential 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. Another concern is the need to repair or replace the sealant around the exterior of the building. These concerns encompass loss of use/reliability issues. These findings, along with recommendations for repairs, are detailed in the body of this report.

1.0-B STRUCTURAL OVERVIEW

Martin/Martin conducted a building condition assessment on September 24, 2013 of the State Services Building located at 1525 Sherman Street in Denver, Colorado. The purpose of our condition assessment was to identify structural defects, damage and deterioration.

The State Services building was constructed in 1958. The structural framing consists of slab on metal deck supported by steel beams and steel columns. The foundation system consists of a continuous concrete footing along the exterior walls and isolated concrete interior footings, according to previous reports.

The structural framing that was readily observable is in good condition. The interior was being remodeled on most of the floors at the time of our observation. Fireproofing covered the structural framing; however, minor cracking was observed in the concrete slabs where the flooring was removed.

Corrosion was observed on the cooling tower support beams. The corrosion should be addressed to prevent additional deterioration.

Parapets along the roof edge were found to be of inadequate height. A fall protection system should be provided for access near exposed edges to meet current safety codes.

1.O-C CIVIL OVERVIEW

The State Services Building site is approximately 0.8 acres and is located at 1525 Sherman Street. The existing site consists of the building and street right-of-way including sidewalk and landscaping. The main building entrance is accessed from Sherman Street. The condition of the site surrounding the building is consistent with an estimated age of 50+ years.

The site exterior is generally in fair condition. There are numerous locations around the building with broken and cracked concrete in need of repair or replacement. Broken concrete in walking paths is a tripping hazard and a high safety concern. The main concern regarding the State Services Building site is the proximity of the irrigation lines near the building. Watering close to the building can saturate the foundation, causing settlement and numerous other problems that could compromise the building structure. The irrigation should be relocated immediately. While the existing building functions in its current state, improvements can be made to prevent future problems, comply with regulations, and improve aesthetics.

1.0-D MECHANICAL, ELECTRICAL, AND PLUMBING OVERVIEW

A site survey for the State Services building at 1525 Sherman St. 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 was provided about the building history and on the electrical and mechanical systems conditions, maintenance routines, and installation dates. It was reported that the outstanding needs for this building are the fire alarm system upgrade and the generator replacement.

The fire alarm is a life safety system that protects life and property. It is critical to have a full detection system that is working properly.

Energy Conservation

It is presumed that the new remodel project will provide an up to current energy codes. Upgrade of controls to full Direct Digital Control (DDC) system will help in saving heating and cooling energy costs. Providing VAV boxes sized to meet the space load will also help in saving energy costs.

1.0-E VOICE AND DATA OVERVIEW

The Voice and Data IT/Telecommunications Infrastructure assessment and findings 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 Services building. It has been found that much of the building's existing IT/Telecommunications infrastructure is not compliant with current industry standards and best practice installation methods. As well, the current infrastructure is such that it may not properly support many newer technology IP devices that are now considered standard in the industry such as VoIP phones and PoE type security cameras. Existing Cat5e cabling has bandwidth limitations as compared to that of the more robust, industry standard Cat6/6A cable plant specifications. The complete 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 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 fiber optic cables and laser optimized multimode fiber optic cables, and Category 3 copper backbone cables should be installed from the MDF room to each IDF room to support the technology systems. Category 6 UTP cable shall be installed from the telecom outlets and IP field devices to termination hardware in the IDF rooms using the conduit and cable tray horizontal pathways. A proper grounding and bonding system must be provided in the MDF/IDF rooms. A proper grounding system 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 methods must be applied, including BICSI and TIA/EIA design and construction guidelines. For renovation projects, any applicable State Office of Information Technology (OIT) design criteria documents should be followed.

The following list prioritizes voice/data infrastructure upgrades required:

1. Necessary: Retrofit facility with proper MDF/IDF room distribution, which meets industry standard for telecommunications 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: Provision voice/data infrastructure to support wireless access points (WAPs), to allow 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 Services 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 Services 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 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 (IoIP) 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.

2.0 OVERALL BUILDING ASSESSMENT FINDINGS AND RECOMENDATIONS

2.1 ARCHITECTURE

2.1-A EXTERIOR BUILDING ENVELOPE/SITE

General

The State Services Building is a seven-story tall building supported by a concrete and steel structural frame. The facade consists of a minimalist design with a repeating pattern of vertical ribbon windows and is clad in white marble veneer above a dark grey and pink-flecked granite foundation extending to the window sill height of the First Floor.

The building has a number of entrances and exits located around the exterior. The main building entrance, on the east side along Sherman Street, is raised above ground level to allow entry to the building at the level of the First Floor. The entrance is accessed from the south by a granite stairway with brass railings or from the north by a granite ramp with a decorative brass railing. The entrance structure is clad in a polished red stone with a decorative brass railing along the front edge and a pair of brass bands encircling the top of the two columns. The canopy covering the entrance has a peaked glass skylight in the center with a colorful mosaic mural around the perimeter of the skylight's base. The Sherman Street Entrance is paved in granite and continues to a decorative concrete area with colored paving between the front of the entrance and Sherman Street. A concrete sidewalk continues from the decorative paved area, extending along the east and south sides of the building adjacent to Sherman Street and East Colfax Avenue respectively. There is an accessible entrance with a ramped approach located at the south end of the west side of the building at the Ground Floor level. Additional entrances on the west side of the building at the Ground Floor level include a loading dock with a service entry door requiring key-code access and an employee entrance further north that appears to serve the west parking area. There is a service entrance requiring key-code access from the west end of the north side of the building from the Ground Floor. There is also an emergency exit from the Sub-basement Floor via stairs leading up to the ground level at the east end of the north side of the building.

The roof contains an elevator penthouse which is set back from the

elevations of the building and has white tile cladding on the walls. The inside face of the roof parapet and the penthouse roof parapet is brick. The coping of the parapet at the roof consists of marble stone blocks and the coping of the parapet at the penthouse roof consists of masonry blocks sealed with a white coating.

It was reported that there is currently no insulation in the exterior walls and that this was not addressed during the renovation of the building in 1992. It was further noted that the lack of insulation has made it difficult to maintain the temperature within the building. The exterior walls of the building should be insulated to provide temperature control and energy savings.

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

Front & Side/East & South Elevations of the State Services Building

Back/West Elevation of the State Services Building

Side/North Elevation of the State Services Building

View of the Sherman Street Entrance on the east side of the building.

View of the glass skylight and mosaic mural above the Sherman Street Entrance.

Cladding

The marble veneer panels cladding the majority of the building appear to be in fair condition overall. The granite veneer panels cladding the foundation of the building and extending up to the window sill height of the First Floor are also in fair condition overall with some soiling noted (see Fig. 2.1.A.1 and Fig. 2.1.A.2) and some cracking and damage noted in spots around the building (see Fig. 2.1.A.3 and Fig. 2.1.A.4). It was reported that the concrete pits, with granite cladding around the exterior, on the south and east side of the building are deteriorating where water has seeped through the retaining wall capped with granite. It was further reported that the underground portion of the walls of the concrete pits needs a waterproofing barrier and that the joint material needs to be replaced and resealed.

The sealant between the joints of the readily observable marble and granite panels was noted to be widely deteriorating or missing entirely around the exterior of the building; creating access points by which water can penetrate the building envelope (see Fig. 2.1.A.5 through Fig. 2.1.A.8). There were areas that appeared to have new sealant applied between the joints, however it was noted that the new sealant abruptly stopped, leaving large gaps between the stone panels and exposing the building envelope to the elements (see Fig. 2.1.A.9). It is likely that water penetration is causing the cracking and damage to the stone panels noted above and it is likely causing unseen damage to the building envelope. The deterioration will only accelerate the longer this issue is left unaddressed. It was reported that exterior cleaning and caulking is on the Capitol Complex list of controlled maintenance projects that need to be addressed.

The white brick along the inside face of the roof parapet and the Penthouse parapet appears to be in fair condition overall. There is an area of brick along the west side of the Penthouse that is deteriorating, with spalling noted (see Fig. 2.1.A.10). It was noted that the mortar between the brick is in generally fair condition with some minor deterioration overall. There was an area where the mortar was observed to be cracking along the joint lines (see Fig. 2.1.A.11).

The tile cladding on the walls of the Penthouse appears to be in fair condition overall with some minor spalling, some bubbling and flaking off of the protective coating, and some soiling observed during the site survey visit (see Fig. 2.1.A.12 and Fig. 2.1.A.13). The soiling appeared to be related

to the corrosion of various pieces of equipment mounted around the walls of the Penthouse. The sealant around the air grilles and along the base of the Penthouse walls was noted to be deteriorating, creating access points by which water can penetrate the building envelope.

Deterioration and damage was noted to the masonry blocks along the top edge of the Penthouse roof parapet (see Fig. 2.1.A.14). It appears that the protective coating is flaking off around the joints between the blocks. This is likely due to the fact that the sealant, or mortar, is deteriorating, or missing entirely, from the joints between the blocks, allowing water to collect and penetrate the parapet coping system (see Fig. 2.1.A.15). The coping of the Penthouse roof parapet appears to be flat, which could also be contributing to the deterioration of the masonry blocks. A small amount of deterioration and damage was noted to the marble blocks along the top edge of the roof parapet (see Fig. 2.1.A.16). The marble blocks were noted to be generally soiled around the perimeter of the roof. It was further noted that the marble coping appears to be flat. The mortar under the marble blocks appears to be in generally poor condition with deterioration observed around the perimeter of the roof (see Fig. 2.1.A.17).

We were unable to access the Cafeteria deck located on the First Floor at the south end of the west side of the building on the day of the site survey visit. The Cafeteria was undergoing renovations at the time of the visit. It is our understanding that the Cafeteria deck area is a part of this renovation project and that all issues with this area are to be addressed per the renovation.

Fig. 2.1.A.1 Generally soiled granite panels noted around the exterior of the building.

Fig. 2.1.A.2 Soiled granite panels noted around the base of the building, especially on the west side.

Fig. 2.1.A.3 Damaged granite panel observed during the site survey visit.

Fig. 2.1.A.4 Cracked granite panel observed during the site survey visit.

Fig. 2.1.A.5 Typical instance of deteriorating and missing sealant noted at the granite panels around the exterior of the building.

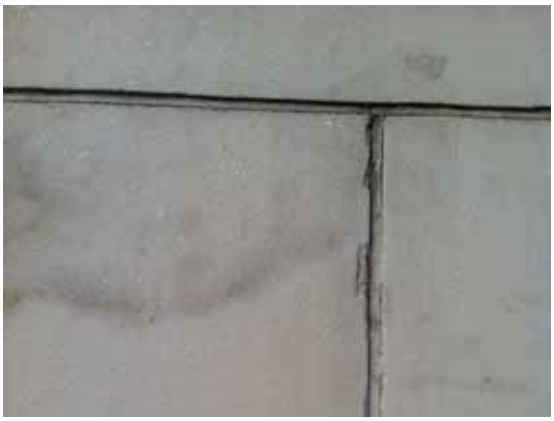

Fig. 2.1.A.6 Typical instance of deteriorating and missing sealant noted at the marble panels around the exterior of the building.

Fig. 2.1.A.7 Deterioration and missing material around an air grille at the exterior of the building.

Fig. 2.1.A.8 Sealant deteriorating and missing along the base of the building, allowing water penetration.

Fig. 2.1.A.9 New sealant that abruptly stops, leaving large gaps between the stone and the base of the building exposed to water penetration.

Fig. 2.1.A.10 Deteriorating and spalling brick observed along the west side of the Penthouse roof.

Fig. 2.1.A.11 Areas of cracking mortar noted along the brick joints around the roof and Penthouse roof parapets.

Fig. 2.1.A.12 Soiling and staining of the tile cladding on the Penthouse walls caused by the corrosion of metal equipment mounted to the walls.

Fig. 2.1.A.13 Damage and deterioration noted at the tile cladding on the Penthouse walls. Deteriorating sealant noted around air grilles and along the base of the walls.

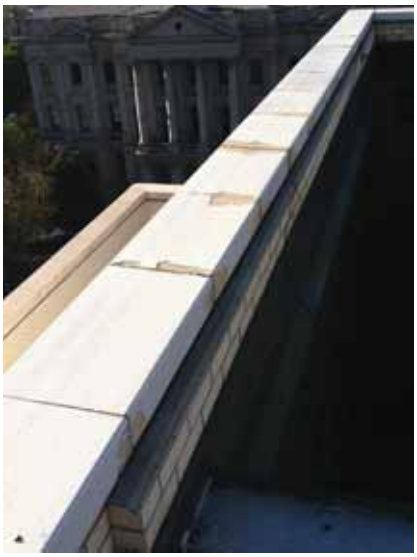

Fig. 2.1.A.14 General deterioration of the masonry blocks observed along the top edge of the Penthouse roof parapet.

Fig. 2.1.A.15 Sealant deteriorating, or missing entirely, from the joints between the masonry blocks along the top edge of the Penthouse roof parapet, is likely resulting in damage to the coating on the blocks.

Fig. 2.1.A.16 Damaged marble blocks noted in a few spots around the top edge of the roof parapet.

Fig. 2.1.A.17 Deteriorating mortar observed under the marble blocks along the top edge of the roof parapet.

Recommendations:

- Clean soiled/stained granite panels around the exterior of the building using an approved cleaning method.
- Repair or replace any cracked, spalling, or otherwise damaged marble or granite panels around the building exterior. The majority of the damage was readily observable at the granite panels around the building's base.
- With the exception of the recently applied sealant observed in a few areas around the building, remove existing material from the joints between the marble and granite panels, along the base of the building, at the concrete pits, and around the doors and replace with new sealant. Also remove deteriorating material at the Penthouse walls around air grilles and along the base of the walls and replace with new sealant. New sealant, backup materials, and preformed joint fillers should be nonstaining. Petroleum-based organic adhesives should be avoided as they may stain the stone. *Note: it was reported in April of 2014 that most of the sealant has been replaced along the lower portion of granite around the entire building since the date of the site survey visit.
- Examine marble and granite panels for any deterioration behind the stone due to potential water penetration and repair as necessary.
- Repair the brick along the inside face of the Penthouse roof parapet where deteriorating along the west side, as noted above.
- Minimal tuck-pointing of the inside brick face of the roof parapets is required to maintain performance and to prevent further deterioration.

- Repair the inside brick face of the roof parapet and the Penthouse roof parapet at any areas with cracking mortar.
- Clean soiled/stained tile cladding on the walls of the Penthouse using an approved cleaning method.
- Repair or replace any cracked, spalling, or otherwise damaged tile cladding on the walls of the Penthouse.
- Remove the marble coping blocks along the top edge of the roof parapet as required. Remove the deteriorating mortar under the blocks as required. Repair or replace any damaged marble blocks. Clean the soiled marble blocks with an approved cleaning method. Reinstall the removed marble blocks along the top edge of the roof parapet, setting the slope of the top surface to provide proper drainage off of the coping.
- Remove the masonry coping blocks along the top edge of the Penthouse roof parapet as required and install new blocks with a sloped top surface to provide proper drainage off of the coping. Match the finish of the existing wall tiles cladding the exterior of the Penthouse.
- Insulate the exterior walls of the building to provide temperature control and energy savings.
- Repair or replace any damaged concrete at the concrete pits on the south and east sides of the building as required. Provide a waterproofing barrier at the underground portions of the walls as required.

Glazing Systems and Doors

The windows are insulated, double-pane, and non-operable and appear to be in fair condition overall. The age of the windows is unknown but they were likely installed during the building renovation and rededication in 1992. The sealant around the windows appears to be deteriorating and should be addressed to maintain the performance of the windows.

The doors at the Sherman Street Entrance and at the accessible entrance at the south end of the west side of the building appear to be in fair condition overall. It was noted that the second set of doors on the interior side of the accessible entrance vestibule have an air gap between the door slabs. This gap allows air leakage and thermal transfer that the vestibule area is meant to prevent (see Fig. 2.1.A.18). The service door near the loading dock and the employee entrance doors on the west side of the building appear to be in fair condition with signs of aging and wear-and-tear noted,

along with minor signs of corrosion (see Fig. 2.1.A.19). The emergency exit door on the west end of the north side of the building, from the Ground Floor, has evidence of water damage on the interior side of the door (see Fig. 2.1.A.20). The emergency exit door on the east end of the north side of the building, from the Sub-basement Floor, has evidence of water damage on the stairs leading up to the door (see Fig. 2.1.A.21). It was noted that daylight is visible along the bottom edge of the door slab. The water damage in this area appeared to be extensive and is potentially originating from additional sources, along with the emergency door.

Fig. 2.1.A.18 Interior doors at the accessible entrance vestibule on the south end of the west side of the building have an air gap between the door slabs.

Fig. 2.1.A.19 General signs of aging and wear-and-tear, along with minor signs of corrosion, noted at the service and employee entrance doors on the west side of the building.

Fig. 2.1.A.20 Water damage observed at the interior side of the emergency door on the west end of the north side of the building.

Fig. 2.1.A.21 Daylight is visible along the bottom edge of the emergency door on the east end of the north side of the building and evidence of water damage was observed on the interior side of the door.

Recommendations:

- Remove existing sealant around the windows and doors and replace with new sealant. New sealant, backup materials, and preformed joint fillers should be nonstaining. Petroleum-based organic adhesives should be avoided as they may stain the stone.
- Install an astragal weatherstripping system between the doors on the interior side of the accessible entrance vestibule, located at the south

end of the west side of the building, to prevent air leakage and energy loss.

- Remove any corrosion from the exterior doors on the north and west sides of the building and treat with a rust inhibitor. Repaint the doors to match the existing.
- Repair or replace the emergency exit doors on the north side of the building, ensuring that these areas are properly waterproofed and provide a means of draining water away from the building to prevent further water intrusion and damage. Repair the damage to the interior of the building. *Note: it was reported in April of 2014 that the north ground floor exit steps have been etched for drainage and a new threshold and weather stripping have been installed since the date of the site survey visit.
- Further investigate possible additional sources of the water damage noted inside of the emergency exit area on the Sub-basement Floor and repair as necessary.

Roof

It is our understanding that the roof was last replaced during the 1992 renovation and rededication of the building, making the roof over twenty years old. It was reported that there are no plans to replace the roof as part of the renovation project underway at the building at the time of the site survey visit. It was reported that roof replacement is on the Capitol Complex list of controlled maintenance projects that need to be addressed.

The roof and the Penthouse roof are in poor condition overall with water known to be leaking into the building (see Fig. 2.1.A.22 and Fig. 2.1.A.23). The roofing membrane appears to be asphalt sprayed with a protective coating and was observed to be deteriorating overall (see Fig. 2.1.A.24 and Fig. 2.1.A.25). Issues with ponding were observed in a number of locations near roof drains (see Fig. 2.1.A.26 and Fig. 2.1.A.27). Some of the drain covers and exhaust pipes are in fair condition and some are showing signs of corrosion (see Fig. 2.1.A.28). It was noted in a few locations that debris is collecting near the roof drains (see Fig. 2.1.A.29). The flashing at the roof parapets and around the base of the Penthouse was noted to be in generally poor condition with widespread corrosion and deterioration (see Fig. 2.1.A.30 and Fig. 2.1.A.31).

Fig. 2.1.A.22 Evidence of water intrusion at the Penthouse ceiling.

Fig. 2.1.A.23 Water observed on the floor of the Penthouse.

Fig. 2.1.A.24 Typical overall deterioration of the roofing membrane.

Fig. 2.1.A.25 Typical overall deterioration of the roofing membrane, including at membrane patches.

Fig. 2.1.A.26 Ponding observed in several spots near the roof drains.

Fig. 2.1.A.27 Ponding observed in several spots near the roof drains.

Fig. 2.1.A.28 Drain cover with signs of corrosion and with moss growing near the base.

Fig. 2.1.A.29 Debris observed to be collecting near a roof drain.

Fig. 2.1.A.30 General corrosion and deterioration of the flashing noted around the roof.

Fig. 2.1.A.31 General corrosion and deterioration of the flashing noted around the roof.

Recommendations:

- Replace the existing roof with a new roofing system, including a new membrane, roof drains, and flashing around the perimeter of the Penthouse and the parapet.
- Remove any debris collecting on the roof on a regular basis.

Canopies

The readily observable portions of the entrance canopies around the building appeared to be in fair condition overall. Given the generally poor condition of the sealant observed around the exterior of the building, the condition of the sealant at the Sherman Street Entrance's glass skylight should particularly be examined. There was minor spalling of the concrete noted at the canopy over the accessible entrance at the south end of the west side of the building (see Fig. 2.1.A.32).

Fig. 2.1.A.32 Minor spalling noted at the accessible entrance canopy at the south end of the west side of the building.

Recommendations:

- Examine the condition of the glass skylight at the Sherman Street Entrance and repair as necessary. Due to the generally poor condition of the sealant and mortar around the exterior of the building, closely examine the condition of the sealant around the skylight and replace as necessary to maintain the performance of the system and prevent deterioration.
- Repair any spalling or damage at the accessible entrance canopy at the south end of the west side of the building.

Site Elements

The exterior granite stairs and granite ramp leading up to the main Sherman Street Entrance on the east side of the building appear to be in fair condition overall. The low granite walls around the building appear to be in fair condition as well. The sealant between the joints of the stone, however, is deteriorating or missing entirely from areas (see Fig. 2.1.A.33, Fig. 2.1.A.34, Fig. 2.1.A.35, and Fig. 2.1.A.36). This appears to be a widespread issue around the building and needs to be addressed in the near future to maintain performance and prevent deterioration and damage to the materials and structure. The sealant, or mortar, was also noted to be deteriorating from the granite guardrail connection pockets at the Sherman Street Entrance, allowing water to pool in those areas (see Fig. 2.1.A.37).

There is a large crack across the landing at the employee entrance at the north end of the west side of the building (see Fig. 2.1.A.38). The crack begins at the north side of the doorway at a section of repaired concrete and continues across the entire width of the landing.

The west wall of the one-story concrete structure running along the north side of the building was noted to be spalling and cracking in a number of spots (see Fig. 2.1.A.39).

The brass building signage mounted to the granite panels at the Sherman Street Entrance is generally soiled (see Fig. 2.1.A.40).

It was reported that there are exterior renovations at grade level that have been ongoing.

Fig. 2.1.A.33 Sealant deteriorating or missing entirely from the joints between the granite at the Sherman Street Entrance stairway.

Fig. 2.1.A.34 Typical instance of deteriorating sealant noted at the granite cladding on the low walls around the building.

Fig. 2.1.A.35 Typical instance of sealant missing entirely at the granite cladding on the low walls around the building.

Fig. 2.1.A.36 New sealant that abruptly stops, leaving the wall exposed to water penetration.

Fig. 2.1.A.37 Sealant or mortar is deteriorating and missing at the guardrail connections to the granite walls at the Sherman Street Entrance and is allowing standing water.

Fig. 2.1.A.38 A large crack noted at the concrete landing of the employee entrance at the north end of the west side of the building.

Fig. 2.1.A.39 Spalling and cracking noted at the west wall of the one-story concrete structure along the north side of the building.

Fig. 2.1.A.40 Soiled brass building signage noted at the Sherman Street Entrance.

Recommendations:

- Repair or replace any damaged stone panels and blocks at and around the Sherman Street Entrance stairway and ramp and at the low walls around the exterior of the building. *Note: it was reported in April of 2014 that the broken granite at the front railing (see Fig. 2.1.A.37) has been repaired since the date of the site survey visit.
- Remove existing sealant around stone panels and blocks at the Sherman Street Entrance stairway, ramp, and corresponding guardrail connection pockets and replace with new sealant. Also remove existing sealant around stone panels and blocks along the low walls around the exterior of the building, and replace with new sealant. Sealant, backup materials, and preformed joint fillers should be nonstaining. *Note: it was reported in April of 2014 that most of the sealant has been replaced along the lower portion of granite around the entire building since the date of the site survey visit.

- Repair or replace the cracked concrete at the landing of the employee entrance at the north end of the west side of the building. Determine the cause of the cracking and repair as necessary.
- Repair or replace spalling, cracking, or otherwise damaged concrete around the exterior of the one-story structure along the north side of the building.
- Clean the brass building signage mounted to the granite panels at the Sherman Street Entrance using an approved cleaning method. *Note: it was reported in April of 2014 that much of the brass trim and signage has been cleaned, polished, and sealed since the date of the site survey visit.

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 7 stories tall, has a ground floor and a sub-basement, and has a total floor area of 165,930 square feet. If this building was built

today, it 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) according to IBC's Table 503 and 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.

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 Services 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.

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, dated June of 2004, appear to indicate that the common paths of egress travel throughout the building, as it currently exists, comply with this code requirement, with the exception of the Sub-basement Floor. The common path of egress travel from the Storage Room located in the southwest corner of the Sub-basement Floor is approximately 117 feet. It is our understanding that the Sub-basement Floor is not included in the renovation project in progress at the time of the site survey visit. It is also our understanding that any upgrades to the building required by current codes and regulations will be addressed as part of the ongoing renovation project. It is further our understanding that the renovations in progress at the time of the site survey visit are being completed per existing code requirements.

According to Table 1016.2 of the IBC (2012), 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 Services Building's floor plans to an exit or exit stairway is 168 feet according to the plans provided by the Owner and dated June of 2004. 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 exists from the southeast side of the Seventh Floor to an exit discharge to a public way (traveling down through the south stairway to the First Floor and out through the Sherman Street Entrance) is 471 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, which is well within the 300 feet allowed by code. It is our understanding that any building upgrades required by current codes and regulations will be addressed as part of the renovation project in progress at the time of the site survey visit. It is also our understanding that the renovations in progress at the time of the site survey visit are being completed per existing code requirements.

The fire rating of the doors to the interior exit stairways is unknown. 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 Services Building has 7 stories, along with a Ground Floor and a Sub-basement Floor, 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. It is our understanding that any building upgrades required by current codes and regulations will be addressed as part of the renovation project in progress at the time of the site survey visit.

There are six means of egress from the building, one from the First Floor, four from the Ground Floor, and one from the Sub-basement Floor. There are two means of protected egress from each floor via the two interior exit stairways. The approximate distance between the two interior exit stairways on the Second through Seventh Floors, measured in a straight line between

the stairway doorways, is approximately 61'-8". According to Section 1015.2.1.2 of the IBC (2012), where two exits or exit access doorways are required from any portion of the exit access of a building equipped throughout with an automatic sprinkler system, the exits or exit access doorways shall be placed a distance apart equal to not less than one-third of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between exits or exit access doorways. The approximate maximum overall diagonal dimension of the State Services Building is 210'-0" and one-third of that length is 70'-0". Therefore the distance of approximately 61'-8" between the two interior exit stairways on the Second through Seventh Floors does not comply with the current code requiring a 70'-0" minimum separation. The approximate distance between the two interior exit stairways on the Sub-basement Floor, measured in a straight line between the stairway doorways, is approximately 92'-0" and is in compliance with the current code requiring a 70'-0" minimum separation. It is our understanding that any building upgrades required by current codes and regulations will be addressed as part of the renovation project in progress at the time of the site survey visit.

The Ground Floor emergency exit located at the west end of the north side of the building can only be opened by pushing a button near the door (see Fig. 2.1.B.1). We were unable to confirm whether this device is arranged to unlock by a signal from, or loss of power to, the sensor.

Fig. 2.1.B.1 Pushing the button of a locking device is required to open the Ground Floor emergency exit door located at the west end of the north side of the building.

Recommendations:

- Verify the fire-resistance ratings of the existing interior exit stairways and doors and upgrade as necessary.
- Verify that the locking device at the Ground Floor emergency exit located at the west end of the north side of the building is arranged to unlock by a signal from, or loss of power to, the sensor per code

requirements. *Note: it was reported in April of 2014 that the ground floor exit door has been replaced, and that the hardware has also been replaced with an exit device (panic bar) with an electric strike for entry, since the date of the site survey visit.

Fire Suppression Systems

There is a fully automatic sprinkler system throughout the building.

Stairs and Ramps

In general, the exit stairs comply with the code requirements for stairs, with the exception of the stairway railing system. The current handrail system exceeds guardrail opening limitations, easily allowing passage of a sphere 4 inches in diameter (see Fig. 2.1.B.2). According to Section 1013.4 of the IBC (2012), required guardrails shall not have openings which allow passage of a sphere 4 inches in diameter.

The top of the railings are too low in height. The top of the handrail above the stair nosing is approximately 31 inches (see Fig. 2.1.B.3). 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.

Fig. 2.1.B.2 The distance between the guardrail openings exceeds 4 inches in diameter.

Fig. 2.1.B.3 The height to the top of the railing within the interior exit stairways.

Recommendations:

- Replace the existing stairway railing system with a new railing system that complies with the code requirements.

Doors

The majority of the interior doors throughout the building appear to be equipped with lever-style door handles. Many of the doors were not yet installed at the time of the site survey visit. The door handles used on the doors should be verified following the completion of the renovation project in progress at the time of the site survey visit. A few doors with knob-style door handles were observed throughout the Penthouse (see Fig. 2.1.B.4).

Fig. 2.1.B.4 Typical knob-style door handle found in the Penthouse.

Recommendations:

- Replace any knob-style handles on the interior doors with lever-style handles.

Security

There is no reception desk or check-in area in the building. A security camera was noted in the First Floor elevator lobby (see Fig. 2.1.B.5). There was a sign observed in the Ground Floor loading dock area reminding employees to close the overhead rolling door when not in use (see Fig. 2.1.B.6). It was reported that the security needs and check-in requirements vary by floor. It was noted that a few of the floors had a card reader controlling access from the interior side of the exit stairway (see Fig. 2.1.B.7).

The Sherman Street Entrance on the east side of the building is the means of public access to the building. There is key-code access available at the Sherman Street Entrance for times outside of regular building hours. The entrances off of the parking lot on the west side of the building require key-code access to enter the building. The accessible entrance on the south end of the west side of the building is further equipped with a security camera (see Fig. 2.1.B.8).

Fig. 2.1.B.5 Security camera noted in the First Floor elevator lobby.

Fig. 2.1.B.6 A sign observed in the loading dock area reminding employees to close the door when not in use.

Fig. 2.1.B.7 Card access reader observed at a few of the floors from the interior side of the stairway.

Fig. 2.1.B.8 Security camera noted at the accessible entrance on the south end of the west side of the building.

2.1-C GENERAL ACCESSIBILITY ISSUES

It was reported that the restrooms were not included in the interior renovation project in progress throughout the State Services Building at the time of the site survey visit. The restrooms throughout the building appear to generally comply with accessibility standards. The restrooms appear to have the same layout from floor-to-floor. It was noted that the men's restrooms throughout generally provide an ambulatory toilet compartment while the women's restrooms throughout generally provide a wheelchair accessible toilet compartment. It was also noted that some of the restrooms were equipped with an automatic door opener and wheelchair accessibility signage, although these restrooms were located on floors with greater levels of completion in regards to the interior renovation project. There are locker rooms located on the Ground Floor for men and women which provide lockers, an ambulatory accessible toilet compartment, a generally accessible lavatory without insulation wrapped around the pipes, and a generally accessible shower.

There appeared to be a minimum of one accessible lavatory provided per restroom as required by code. It was noted that the insulation wrapped around the pipes of the accessible lavatories throughout was either in generally poor condition or missing entirely (see Fig. 2.1.C.1 and Fig. 2.1.C.2). The insulation observed to be in poor condition is generally deteriorating and does not appear to be providing adequate protection around the lavatory pipes. According to Section 606.6 of ICC/ANSI A117.1-2003, water supply and drainpipes under accessible lavatories and sinks shall be insulated or otherwise configured to protect against contact.

Fig. 2.1.C.1 Generally deteriorating insulation wrapped around the pipes of the accessible lavatories throughout does not appear to be providing adequate protection.

Fig. 2.1.C.2 Typical instance of insulation missing entirely from the pipes of an accessible lavatory.

The drinking fountains throughout the building appear to comply with general accessibility requirements, with the exception of the clear space under the fountains (see Fig. 2.1.C.3). The measurement to the bottom of the opening beneath the drinking fountains is approximately 26-1/2 inches. According to Section 306.3.1 of ICC/ANSI A117.1 (2003), the space beneath a drinking fountain between 9 inches and 27 inches above the floor shall be considered knee clearance and shall comply with Section 306.3.

It appeared that the majority of the Break Rooms throughout were not being included in the renovation project, with the possible exception of the Second, Third, and Fourth Floor Break Rooms which were noted to be in a state of demolition at the time of the site survey visit. The sinks observed in the other Break Rooms throughout were noted to be generally non-accessible (see Fig. 2.1.C.4).

Fig. 2.1.C.3 Generally accessible drinking fountain with the exception of the clear space provided underneath.

Fig. 2.1.C.4 Typical non-accessible sink found in the Break Rooms throughout.

Recommendations:

- Where not provided, reconfigure restrooms to provide a minimum of one wheelchair accessible toilet compartment per restroom where possible.
- Remove existing insulation wrapped around the accessible lavatory pipes throughout and replace with new insulation per code requirements.
- Install insulation around accessible lavatory pipes where not provided.
- Provide the code-required 27 inches of clearance underneath the drinking fountains where possible.
- Install accessible sinks in the Break Rooms throughout where possible.

2.1-D ELEVATORS

It was reported that the age of the elevator cabs and equipment is unknown. It was reported that modernization of the elevators is on the Capitol Complex list of controlled maintenance projects that need to be addressed.

Recommendations:

- 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

Per the Hazard Material Reports supplied by the Owner, asbestos may be present in the State Services Building. The Hazard Material Report supplied by the Owner with the file name "Report 14.pdf" lists the location of the asbestos test as "State Annex 1525 Sherman." We were unable to obtain confirmation regarding whether this report is referring to the Capitol Annex Building located at 1375 Sherman Street in Denver, Colorado or the State Services Building located at 1525 Sherman Street in Denver, Colorado.

Based on the construction date of the building, it is possible that surfaces are painted with paint containing lead.

Recommendations:

- Determine whether or not asbestos is present in the building. If asbestos is present in the building, determine the extent of its existence and abate as necessary. *Note: It was reported in April of 2014 that there are extensive books of an asbestos abatement completed in 1990/1991 at the State Services Building and that Jim Tromley of Architectural Environmental was the project designer and consultant for the State of Colorado. It was further reported that these

books are being stored in the sub-basement blue print room of the State Services Building.

- Sampling for lead paint must be completed if any painted surfaces will be sanded.

2.1-F PLANNED AND ON-GOING PROJECTS

The building was undergoing an extensive interior renovation project including areas of the Ground Floor and the First Floor through the Seventh Floor at the time of the site survey visit on September 24, 2013. It was reported that the projected move-in date of the building's tenants was projected to occur during the last week of October of 2013.

2.2 STRUCTURAL

2.2-A EXTERIOR BUILDING ENVELOPE

The building's exterior is in good condition with a few minor exceptions. The steel beams supporting the cooling towers and associated guardrail are corroding (Fig. 2.2.A.1). The corrosion is minor, but should be addressed soon to prevent additional deterioration.

Fig. 2.2.A.1

The grout pockets for the guardrail connections to the granite walls at the east entrance are deteriorated or missing grout (Fig. 2.2.A.2). The pockets allow standing water around the railing and the potential for additional deterioration.

Fig. 2.2.A.2

It was reported that the concrete pits on the south and east sides are deterioration due to water seepage. Joints should be resealed and a water proofing membrane applied to the exterior face of the walls.

Recommendations:

- Remove the rust from the steel members at the cooling tower, coat with a rust inhibitive primer and repaint to match the existing.
- Remove cracked and spalled grout from the pockets around the guardrail posts and provide new non-shrink grout with positive drainage away from the railing.

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. Minor cracking was observed in the concrete slabs on metal deck. The cracks are common and are not a structural concern.

Spalls and cracks were observed on a concrete beam in the sub-basement (Fig. 2.2.B.1). The deterioration appears to be due to long term water leaks from the poorly sealed joints above the beam.

Fig. 2.2.B.1

Recommendations:

- Repaired the spalled and cracked concrete on the concrete beam in the sub-basement to prevent further deterioration and corrosion. The joints above should be resealed and maintained to stop the water leaks.

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

Inadequate parapet heights were observed adjacent to the loading dock and the upper roof levels (Fig. 2.2.C.1). Parapets should be at least 42 inches tall or fall protection provided for access near the exposed edges to meet current safety codes.

Fig. 2.2.C.1

No guardrails were provided around the opening for the cooling tower (Fig. 2.2.C.2). The fall is approximately 20 feet, which is well beyond the limits set by OSHA.

Fig. 2.2.C.2

The roof access hatch does not have a rail extension for assistance when climbing through the access hatch.

Recommendations:

- Design and install fall protection systems for safe access near exposed edges.
- Provide a rail extension at the access hatch for assistance climbing through the hatch.

2.2-D PLANNED AND ON-GOING PROJECTS

N/A

2.3 CIVIL

2.3-A EXTERIOR BUILDING ENVELOPE/SITE

General

The State Services Building is located at the northwest corner of Colfax Avenue and Sherman Street with an address of 1525 Sherman Street in Denver, Colorado. The building is bordered by the State Office Building to the east, parking and the State Human Services Building to the north, parking to the west and the State Capitol to the south. The State Services building site is approximately 0.8 acres. The existing site consists of the building and street right-of-way including sidewalk and landscaping. There is an alleyway located to the west of the building separating the building from parking. The main building entrance is accessed from Sherman Street (Fig. 2.3.A.1). The site surrounding the building is consistent with a building approximately 50+ years old.

NOTE: Descriptions of existing infrastructure contained herein are based on public utility information provided by the City and County of Denver. Unless noted otherwise, no detailed survey information was reviewed as part of this site analysis. Estimates of drainage patterns, site grades, and slopes are based upon visual observation or information provided by others, i.e. Google Earth, Denver GIS, etc.

Figure 2.3.A.1 – State Services Building

Grading and Drainage

The site slopes generally from east to west at grades ranging from 1-10%. The high point of the site is at the building entrance at an elevation of approximately 5274. The site slopes east towards Sherman Street at

approximately 1-2%. The site slopes south towards Colfax Avenue at approximately 6%. Existing runoff is conveyed overland towards the streets. Runoff is collected by a street inlet and conveyed by storm sewer west within Colfax Avenue. Runoff within the alleyway to the west is collected by an area drain and conveyed southerly to Colfax Avenue then westerly within Colfax Avenue.

The Sherman Street entrance is accessed via steps or a ramp (Fig. 2.3.A.2). The building is set back from the public sidewalk and treelawn (Fig. 2.3.A.3). Treelawns are generally flat containing grass and established trees. The south side of the building features tiered walls with landscaped areas in between the walls (Fig. 2.3.A.4 and 2.3.A.5).

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

Figure 2.3.A.2 – Sherman Street Entrance, Steps to Left, Ramp to Right

Figure 2.3.A.3 – Public Sidewalk and Treelawn on east side of Building, Looking North

Figure 2.3.A.4 Tiered Walls with Landscaping

Figure 2.3.A.5 Tiered Walls along Colfax Avenue, Looking West

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 are two parallel water lines within Colfax Avenue. The north line is a 10" water line and the south line is a 12" water line. The building service line appears to connect to an 8" line within Sherman Street and the 10" line within Colfax Avenue. There is a fire hydrant located to the east of the building in front of the State Office Building. There are no known water pressure problems at this time.

The building is served by a sanitary sewer service line connecting to a 9" sanitary sewer main within the alleyway to the west. Sanitary sewer is routed northerly at an estimated slope between 0.5 and 0.75%. The 9" line within the alleyway is tributary to a larger 12" line within East 16th Avenue which flows westerly at a slope of 4%. There are no known sanitary sewer capacity problems at this time.

The existing storm sewer within Colfax Avenue is quite small at 12" in diameter. This line collects the site runoff from the inlet located at the northeast Sherman Street and Colfax Avenue intersection. This storm is part of the West Colfax Avenue line storm sewer 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 building is planned to be upsized to 18" but it is unknown when these improvements will be constructed. There is no storm sewer within Sherman Street.

Existing dry and regulated utilities (electric and telecommunications) are assumed to be located in Colfax Avenue.

Site Paving

The site entrance, featuring decorative concrete and colored paving appeared to be in good condition. Other areas of the site contained numerous locations of broken concrete and concrete cracking. Repair or replace broken or cracked concrete.

Figure 2.3.A.6 Site Concrete Crack

Figure 2.3.A.7 Broken Site Concrete

Figure 2.3.A.8 Concrete Crack in alleyway, Recommended for Repair or Replacement

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.

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 generally comply with current standards but it was noted that the west service entrance was not ADA accessible and there is no public or ADA parking available on the street adjacent to the main entrance.

Site slopes were analyzed by visual inspection and topography provided by the City and County of Denver for drainage and ingress and egress. The landscaped areas surrounding the building are generally flat. Current geotechnical recommendations and standard practice for slopes away from the building are 10:1 for 10 feet and 2% in hardscape areas. The building appears to have these slopes.

An irrigation line was observed close to the foundation of the building (Fig. 2.3.B.1 and 2.3.B.2). Typical geotechnical recommendations do not allow irrigation within 10' of a building perimeter. Irrigation this close may cause wetting of the building foundation, which could lead to numerous problems including settlement. This irrigation line should be relocated and watering methods re-evaluated.

Figure 2.3.B.1 Irrigation Near Building Foundation

Figure 2.3.B.2 Irrigation Near Building Foundation

The roadway curb surrounding the site is generally in fair condition and should be repaired and replaced as needed with any building improvements. All improvements within the public right-of-way should comply with and be coordinated with the City and County of Denver.

Recommendations:

- Relocate irrigation within 10' of the building foundation.
- Repair or replace roadway curb surrounding the site.

2.3-C PLANNED AND ON-GOING PROJECTS

It was reported that exterior at grade renovations have been on-going.

2.4 MECHANICAL, ELECTRICAL, AND PLUMBING

2.4-A OVERVIEW OF EXISTING SYSTEMS

ELECTRICAL SYSTEMS

The State Services building is currently under a major renovation (see Fig. 2.4.A.1).

The power for the 1525 Sherman St. building comes from the tunnel complex and is fed from a medium voltage switch to a 1000kVA transformer located in the sub-basement electrical room. The main gear is a 480/277V, 3000amp switchboard also located in the sub-basement electrical room (see Fig. 2.4.A.2). This building has an emergency generator that provides 480/277V, 600amp of power. This building has an Uninterrupted Power Supply (UPS) system that provides 225amp of power to the server room. It was reported that the engine generator will be replaced in a future project.

Each floor, one through seven, has one electrical room with a 480V bus duct feeding a panelboard. The 480/277V panelboard feeds a lighting panel and a two section 208/120V panelboard via a transformer (see Fig. 2.4.A.3).

Fig. 2.4.A.1 – Remodel in progress

Fig. 2.4.A.2 – Main electrical gear

Fig. 2.4.A.3 – Electrical closet

Lighting

Most of the office lighting is provided with T8 fluorescent fixtures. The fixtures have been preserved for re-installation while under renovation (see Fig. 2.4.A.5). The exit signs appear to be working properly (see Fig. 2.4.A.4). Emergency lighting appears to be working properly.

Fig. 2.4.A.4 – Exit sign

Fig. 2.4.A.5 – Light fixtures to be reused

Fire Alarm

The fire alarm system appears to be in fair working order (see Fig. 2.4.A.6). Some of the devices appear older than 20 years (see Fig. 2.4.A.7). It was reported that it will be replaced in a future project.

Fig. 2.4.A.6 – Fire alarm control panel

Fig. 2.4.A.7 – Smoke detector

Lightning Protection

This building has a lightning protection system installed on the roof (see Fig. 2.4.A.8). Some of the system's components are in need of repair (see Fig. 2.4.A.9 and Fig. 2.4.A.10).

Fig. 2.4.A.8 – Lightning protection

Fig. 2.4.A.9 – Broken lightning protection

Fig. 2.4.A.10 – Lightning protection wire on roof

Recommendations:

- The building is being renovated; therefore there are no recommendations at this time.

MECHANICAL SYSTEMS

The 1525 Sherman St. building is undergoing major renovations on all floors. The air distribution system and fire sprinkler system on each floor is being renovated to meet the new floor plan requirements. The major HVAC

system consists of two existing built up central Air Handling Units (AHUs) serving all floors. The condition of these AHUs appears to be satisfactory. The AHUs have steam heating coils for heating the supply air and chilled water cooling coils for cooling the supply air. The steam and chilled water pipe penetrations are not sealed, as a result air is leaking from the unit (see Fig. 2.4.A.11). The heating hot water for the building is generated by four condensing boilers located in the penthouse. The boilers are approximately three years old and appear to be in good working condition. The original steam to hot water heat exchangers are not in use abandoned in place. The hot water and chilled water distribution is a primary only variable flow system. Two in-line vertical pumps are used for hot water distribution. The building receives chilled water from the central power plant. The original building chilled water distribution pump has been abandoned in place.

Exhaust for the restrooms on each floor is connected to a central exhaust fan located on the roof. The janitor closets are exhausted by way of a separate fan located on the roof.

The cooling tower located on the lower roof serves the chiller plant located in the state office building across the road.

The air distribution in the spaces is by means of fan powered Variable Air Volume (VAV) boxes. The VAV boxes are provided with hot water heating coils. Perimeter offices (zones) are provided with wall mounted recessed convectors. The original VAV boxes were not sized to meet the space load. There were hot and cold spots complaints from the building occupants. The building has Siemens direct digital controls. The controls need to be upgraded to full DDC. The VAV boxes and the controls are being renovated under present renovation project. The filter provided on the VAV boxes is clogged and will need to be replaced (see Fig. 2.4.A.17). Some of the existing branch piping connected to the terminal units do not have proper fitting. Pipe connected to units on upper floor are hand/machince bent instead of using elbow/offset fittings (see Fig. 2.4.A.18). The exisitng equipment like VAV boxes which will be reused are kept in the construction area unprotected (see Fig. 2.4.A.22).

The elevator machine room is conditioned via dedicated air handling unit. The air distribution in the space is not optimal; supply and return grilles are installed close to each other resulting in short cycling of supply air (see Fig. 2.4.A.12). Roof drains in the elevator room are located directly above

the equipment which increases the chances of equipment damage due to water leaks (see Fig. 2.4.A.13). The condensing units are located on the roof. One of the unit appears to be at the end of its useful life and should be replaced (see Fig. 2.4.A.14). The other unit has damaged fins which might be affecting the unit performance.

The server room is provided with dedicated cooling units. The condensate drain from the units is not routed to the nearest floor drain instead is routed to the waste bin on the floor. The condensate is then pumped out from the waste basket (see Fig. 2.4.A.19). The drip tray over the UPS have conduits passing through the tray. The openings around the conduit are not sealed (see Fig. 2.4.A.21).

The 1525 Sherman St. building has separate fire and water entry. The building has standpipes, a fire pump and all floors have sprinklers. The sprinkler piping is being replaced in parts. Some existing sprinkler piping have pro-press fitting. Such fittings are not permitted by today building code. It was indicated that the building is grandfathered by AHJ (see Fig. 2.4.A.16). Domestic water distribution is through a duplex booster pump. It appears that the pump is leaking at the seal (see Fig. 2.4.A.20). Domestic hot water is generated by steam in a heat exchanger located in the basement. The hot and cold water mains don't have isolation valves. Also janitor closet and kitchen don't have clean outs for snaking the drains.

Fig. 2.4.A.11 – Air leakage from opening around pipes

Fig. 2.4.A.12 – Supply and return grilles serving elevator machine room

Fig. 2.4.A.13 – Roof drain piping within elevator machine room

Fig. 2.4.A.14 – Old Condensing unit on roof

Fig. 2.4.A.15 – Condensing unit with damaged fins

Fig. 2.4.A.16– Pro-press fitting used for sprinkler piping

Fig. 2.4.A.17 – VAV filters are clogged

Fig. 2.4.A.18 – Pipes serving upper floor convectors

Fig. 2.4.A.19 – Waste bin used as condensate sump

Fig. 2.4.A.20 – Domestic cold water booster set

Fig. 2.4.A.21 – Drip tray over UPS

Fig. 2.4.A.22 – Existing VAV box stored in the construction area

Recommendations:

- There is air leakage from the central AHU at the pipe penetration. Remove duct tape and seal the opening around the pipes by providing a proper rubber gasket.
- The supply grille and return air grille serving the elevator machine room are located too close to each other. As a result, the supply air is short circuited to return air; consequently, the space condition is not maintained. Provide ductwork to supply air and extend supply air grille further away from the wall. This will improve air distribution and provide uniform temperature in the space.

- Roof drain piping is in the elevator machine room. Any water leakage around the roof drain assembly or from the pipes can damage the elevator machine and electronics. Provide sheetrock bulk head around the pipes to isolate pipes from the room.
- The condensing unit on the roof appears to be at the end of its useful life. Replace the unit with a new higher efficiency unit, which will help save energy costs.
- The condensing unit fins appear to be damaged. Arrange for a combing of the fins; this will improve unit efficiency.
- Pro-press fitting is used for fire sprinkler piping. State facilities personnel indicated that the building is grandfathered by Denver AHJ and because these fitting are original to the building, it is acceptable to Denver AHJ. RMH suggests discussing this with AHJ to obtain their formal approval.
- The temporary filters provided on VAV boxes are clogged. Ensure that filters on all VAV boxes are replaced prior to commissioning and start up.
- There are no proper fittings used for the branch hot water piping. The pipes serving the upper floor convectors are hand/machine bent. These branch pipes should have fittings to match the convector connection point instead.
- In the server room, a recycle waste bin is being used as a condensate sump. Reroute the condensate drain to the nearest janitor closet or other acceptable waste receptor.
- The domestic hot water booster pump leaks and has excessive corrosion. Inspect the pump and if required, replace seals and/or gaskets to stop the leak.
- Seal the opening around the pipes passing through the drip tray over the Uninterrupted Power Supply (UPS). Water can drip down and damage the UPS.
- The existing VAVs which will be reused are kept unprotected. Cover the existing units to prevent dust or debris migration into the unit. Dust will settle on the interior liner of the unit and once it is commissioned, it will discharge dust into the space causing indoor air problems.
- Boilers are installed in the mechanical (AHU) room. State maintenance personnel indicated that the boiler installation has been inspected by AHJ.

- It is our understanding that the renovations are being completed as per the existing codes and the engineer in charge of the project will prepare a thorough punch list for Owner/Contractor review and action.
- Verify that isolation valves on hot and cold water mains are provided.
- Verify that clean out for janitor closet and kitchen for snaking the drain pipes is provided.

2.4-B CODE ISSUES

ELECTRICAL CODE ISSUES

Since the 1525 Sherman St. building is being renovated, it is our understanding that any code issues will be fixed as part of the project.

Recommendations:

- The building is being renovated; therefore there are no recommendations at this time.

MECHANICAL CODE ISSUES

Since the 1525 Sherman St. building is being renovated, it is our understanding that any code issues will be fixed as part of the project.

Recommendations:

- The building is being renovated; therefore there are no recommendations at this time.

2.4-C PLANNED AND ON-GOING PROJECTS

The State Services building at 1525 Sherman St. is currently undergoing a major renovation.

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.

- This is one of the major sites for the State of Colorado networks.
- There has been some recent interior elevation remodel.
- The data center is in the sub-basement.
- It also houses the major phone equipment for the complex.
- Some of the equipment is not currently being used and out of date.
- Water had leaked into the building from the west alley at one time several years ago. The sump pump system pumps in to a blue recycling bin to hold the water.
- The current floor plan is so tight that some of the abandoned equipment cannot roll back out of the door. The equipment will require careful dismantling before removal.
- Nearby is a second server room. The OIT cooling equipment has been supplement by cooling equipment furnish by the serving utility. The room houses two electrical power transformers, which can put off a lot of heat. There is a ground bar in this server room. Reportedly, the UPS equipment is not working.

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 Services 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.
- 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 second IDF room on each floor, vertically stacked as a second 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) 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 a range of 20 to 45 or at approximately 25-foot centers on each floor, mounted in accessible ceilings.

2.5-B CODE ISSUES

Findings

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

Recommendations:

For new renovation work, codes that would be applicable would include but 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 Services 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.

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 Services 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 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 Services 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
- 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 ¾" 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 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 Services building currently.

3.0 FLOOR-BY-FLOOR ASSESSMENT FINDINGS AND RECOMENDATIONS

3.0-A CODE ISSUES

See 2.1-B Code Issues. It is our understanding that the renovations in progress at the time of the site survey visit are to be completed per existing code requirements and that any code issues will be addressed as part of the overall project.

3.0-B GENERAL ACCESSIBILITY ISSUES

See 2.1-C General Accessibility Issues

3.0-C ARCHITECTURAL FINISHES AND INTERIOR COMPONENTS

General Architecture Findings

The building was undergoing an extensive interior renovation project including areas of the Ground Floor and the First Floor through the Seventh Floor at the time of the site survey visit on September 24, 2013. It was reported that the projected move-in date of the building's tenants was projected to occur during the last week of October of 2013.

It is our understanding that the First Floor Cafeteria and the office spaces throughout are the main focus of the renovation to the interior finishes. It was reported that, with the exception of new paint, the elevator lobbies, stairways, restrooms, the majority of the break areas, the service and storage areas on the Ground Floor, and the entirety of the Sub-basement Floor were not to be updated as part of the renovation project. The marble and granite finishes, as well as the decorative brass finishes, throughout the elevator lobbies are to be preserved, including the painted mural on the ceiling of the First Floor elevator lobby. Major upgrades to the office spaces are reported to include new carpet and new paint on the walls. It was reported that the interior doors were saved and are to be reused throughout. It was also reported that the majority of the acoustic ceiling tiles are to be reused, with only the worst of the tiles to be replaced. We were not able to access the First Floor Cafeteria or deck during the site survey visit.

Existing painted mural on the ceiling of the First Floor elevator lobby to remain. Stone and decorative brass finishes to remain in the elevator lobbies throughout.

Ceiling Finishes

Although it was reported that the majority of the acoustic ceilings throughout are to remain, with the worst of the tiles to be replaced, it was noted that the tiles observed during the site survey visit are generally showing signs of aging and wear-and-tear (see Fig. 3.0.C.1, Fig. 3.0.C.2, and Fig. 3.0.C.3). It was unknown during the site survey visit whether or not all of the deteriorating or damaged acoustic ceilings were to be included in the renovation project.

It is our understanding that the gypsum board ceilings throughout have been, or are going to be, repainted, with any issues to be addressed as part of the overall renovation project.

Fig. 3.0.C.1 General deterioration and aging of the acoustic ceilings noted throughout.

Fig. 3.0.C.2 General wear-and-tear and aging of the acoustic ceilings noted throughout.

Fig. 3.0.C.3 Water damage to the acoustic ceiling noted in spots throughout the building.

Wall Finishes

The gypsum board walls throughout were in the process of being renovated at the time of the site survey visit. It is our understanding that any issues with the gypsum board walls, such as the water damage noted near the emergency exit on the west end of the north side of the Ground Floor (see Fig. 3.0.C.4), are to be addressed per the renovation project. There was also damage noted to the gypsum board walls and vinyl baseboard on the Sub-basement Floor (see Fig. 3.0.C.5).

The marble cladding on the walls of the elevator lobbies was noted to be in generally fair condition throughout with some areas of soiling and damage observed during the site survey visit (see Fig. 3.0.C.6, Fig. 3.0.C.7, and Fig. 3.0.C.8).

The four-inch square wainscoting throughout the restrooms appears to be in generally fair condition with some areas of soiling noted (Fig. 3.0.C.9).

General wear-and-tear was noted to the walls in the loading dock area on the Ground Floor (see Fig. 3.0.C.10).

Water damage was noted to the walls near the emergency exit on the Sub-basement Floor (see Fig. 3.0.C.11 and Fig. 3.0.C.12).

Fig. 3.0.C.4 Water-damaged gypsum board noted near the emergency exit on the west end of the north side of the Ground Floor.

Fig. 3.0.C.5 Damaged gypsum board and vinyl baseboard observed on the Sub-basement Floor.

Fig. 3.0.C.6 Areas of soiled marble cladding on the walls noted in the elevator lobbies throughout.

Fig. 3.0.C.7 Areas of soiled marble cladding on the walls noted in the elevator lobbies throughout.

Fig. 3.0.C.8 Damaged marble cladding on the walls noted in the First Floor elevator lobby.

Fig. 3.0.C.9 Soiling of the four-inch square tile wainscoting noted in areas of the restrooms.

Fig. 3.0.C.10 General wear-and-tear noted at the walls in the loading dock area on the Ground Floor.

Fig. 3.0.C.11 Water damage noted at the walls near the emergency exit on the Sub-basement Floor.

Fig. 3.0.C.12 Water damage noted at the walls near the emergency exit on the Sub-basement Floor.

Floor Finishes

The carpet flooring throughout is being replaced as part of the renovation project in progress at the time of the site survey visit. However, it is our understanding that the generally deteriorating and soiled carpet throughout the Sub-basement Floor (see Fig. 3.0.C.13 and Fig. 3.0.C.14) is not included in the renovation. It was noted that there are areas that are pulling loose that have been covered with tape and are creating potential tripping hazards.

It is our understanding that the existing granite tile flooring throughout the elevator lobbies is to remain and will not be replaced as part of the renovation project. The granite tile flooring is in generally fair condition overall with areas of minor damage and soiling noted (see Fig. 3.0.C.15).

It is our understanding that the existing 1x1 vinyl and linoleum tile throughout is to remain and will not be replaced as part of the renovation project. Areas of the 1x1 tile flooring throughout were noted to be soiled and to have signs of general wear-and-tear (see Fig. 3.0.C.16 and Fig. 3.0.C.17). There was water damage noted to the 1x1 flooring near the emergency exit at the west end of the north side of the Ground Floor (see Fig. 3.0.C.18).

It is our understanding that the existing two-inch square floor tile throughout the restrooms is to remain and will not be replaced as part of the renovation project. The two-inch square floor tile is in generally fair condition overall with some areas of soiling noted (see Fig. 3.0.C.19).

It is our understanding that the finishes within the exit stairways are to

remain and will not be replaced as part of the renovation project. The rubber tile flooring on the stairs is in generally fair to poor condition throughout with deterioration noted in numerous locations (see Fig. 3.0.C.20). It was reported that replacement of the finishes on the stair treads is on the Capitol Complex list of controlled maintenance projects that need to be addressed.

It is our understanding that the finishes throughout the Sub-basement Floor are to remain and will not be repaired or replaced as part of the renovation project. There were areas of cracked, or otherwise damaged, concrete flooring noted in spots throughout the Sub-basement Floor (see Fig. 3.0.C.21). There was also water damage noted at the concrete stairs and flooring near the emergency exit at the east end of the north side of the building (see Fig. 3.0.C.22 and Fig. 3.0.C.23).

Fig. 3.0.C.13 Deteriorating and soiled carpet noted throughout the Sub-basement Floor.

Fig. 3.0.C.14 Deteriorating and soiled carpet noted throughout the Sub-basement Floor.

Fig. 3.0.C.15 Areas of soiling and damage noted at the granite tile flooring in the elevator lobbies.

Fig. 3.0.C.16 Discolored 1x1 linoleum tile flooring noted during the site survey visit.

Fig. 3.0.C.17 Damaged and worn 1x1 linoleum tile flooring noted during the site survey visit.

Fig. 3.0.C.18 Water damage noted at the 1x1 floor tile near the emergency exit at the west end of the north side of the Ground Floor.

Fig. 3.0.C.19 Areas of soiling noted at the two-inch square floor tile in the restrooms.

Fig. 3.0.C.20 Deteriorating rubber flooring noted on the stairs.

Fig. 3.0.C.21 Cracked concrete flooring observed on the Sub-basement Floor.

Fig. 3.0.C.22 Water damage observed at the concrete stairs and flooring near the emergency exit on the Sub-basement Floor.

Fig. 3.0.C.23 Spalling concrete stairs and flooring near the emergency exit on the Sub-basement Floor.

Other

It was reported that the existing interior doors were saved and are to be reused throughout. Many of the doors that were observed during the site survey visit were noted to have areas of minor damage and general wear-and-tear (see Fig. 3.0.C.24, Fig. 3.0.C.25, and Fig. 3.0.C.26).

It is our understanding that the majority of the Break Rooms throughout the building are not being renovated as part of the ongoing project at the time of the site survey visit. It was noted that the wood trim, especially the nosing along the front edge of the counters, is generally worn (see Fig. 3.0.C.27).

It is our understanding that the finishes within the exit stairways are to remain and will not be replaced as part of the renovation project. It was noted that the paint is generally wearing off of the metal railings which are also showing evidence of corrosion (see Fig. 3.0.C.28).

Fig. 3.0.C.24 General wear-and-tear noted at the doors.

Fig. 3.0.C.25 General wear-and-tear noted at the doors.

Fig. 3.0.C.26 Wear-and-tear noted at the doors in the loading dock area on the Ground Floor.

Fig. 3.0.C.27 Generally worn wood trim noted in the Break Rooms throughout.

Fig. 3.0.C.28 Wear-and-tear and corrosion noted at the metal railings throughout the stairways.

Recommendations:

- Replace all worn, deteriorating, or damaged acoustic ceiling tiles not addressed by the renovation project in progress at the time of the site survey visit.
- Repair or replace any damaged areas of the gypsum board walls not addressed by the renovation project in progress at the time of the site survey visit.
- Repair or replace any damaged marble cladding on the walls in the elevator lobbies throughout.
- Clean and refinish the marble cladding on the walls in the elevator lobbies throughout.
- Clean the four-inch square tile wainscoting in the restrooms throughout.
- Repair or replace any damaged concrete or concrete block walls in the loading dock area on the Ground Floor and throughout the Sub-basement Floor. Clean and refinish the walls where soiled.
- Determine the cause of the water damage at the walls near the Sub-basement Floor emergency exit and repair as necessary.
- Replace any deteriorating or damaged carpet throughout the Sub-basement Floor not addressed by the renovation project in progress at the time of the site survey visit, paying particular attention to the areas that have been taped down and are creating potential tripping hazards.
- Repair or replace any damaged granite tile flooring in the elevator lobbies throughout.
- Clean and refinish the granite tile flooring in the elevator lobbies throughout.
- Replace any deteriorating or damaged areas of 1x1 vinyl and linoleum tile throughout.
- Clean and refinish areas of soiled 1x1 vinyl and linoleum tile throughout.
- Clean and refinish the two-inch square floor tile in the restrooms throughout.
- Replace the rubber tile flooring on the stairs throughout if not addressed by the renovation project in progress at the time of the site

survey visit. The rubber tile flooring was noted to be deteriorating in a number of locations and is creating a potential tripping hazard. *Note: it was reported in April of 2014 that the stair treads are being replaced and are under contract to do so since the date of the site survey visit.

- Repair or replace any deteriorating or damaged concrete flooring throughout the Sub-basement Floor, including the concrete stairway leading to the emergency exit.
- Clean any soiled areas of the concrete flooring throughout the Sub-basement Floor, especially where water is entering the building near the emergency exit.
- Determine the cause of the water damage noted near the Sub-basement Floor emergency exit and repair as necessary.
- Refurbish any worn or damaged doors that have not already been addressed by the renovation project in progress at the time of the site survey visit. Replace any knob-style door handles throughout with lever-style door handles.
- Refurbish or replace any worn or damaged wood trim in the Break Rooms throughout.
- Replace the existing interior exit stairway railing systems per Section 2.1B Code Issues.

MARTIN / MARTIN CONSULTING ENGINEERS

3.0-D STRUCTURAL

No structural concerns were noted on the Ground Floor and the First Floor through the Seventh Floor. Spalls and cracks were observed on a concrete beam on the Sub-basement Floor. The deterioration is not a structural concern at this time, but should be repaired to prevent additional corrosion and spalls. 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

Refer to Section 2.6-A for Security System general recommendations, as applicable to each floor.

4.0 LEVELS OF RENOVATION NEEDED

Building: State Services Building, 1525 Sherman Street (Denver)

Priority	Main System	Sub System	Level of Renovation Needed		
			Minimal	Moderate	Extensive
1	Exterior Enclosure	Roof			√
1	Exterior Enclosure	Fall Protection (roof)			√
1	Exterior Enclosure	Insulation			√
1	Exterior Enclosure	Sealant / Grout			√
1	Infrastructure	Power			√
1	Infrastructure	Lighting			√
1	Infrastructure	Tele/Com			√
1	Interior	ADA-Sinks (Break Rooms)			√
1	Infrastructure	Fire Alarm			√
1	Infrastructure	Elevator(s)		√	
2	Code	Exit Stairways		√	
2	Exterior Enclosure	Penthouse		√	
2	Exterior Enclosure	Doors		√	
2	Infrastructure	Security Access/IDS		√	
2	Infrastructure	Security Video		√	
2	Interior	ADA-Restrooms		√	
2	Interior	Finishes Ceiling		√	
2	Site	Pavement		√	
3	Exterior Enclosure	Walls	√		
3	Exterior Enclosure	Signage	√		
3	Infrastructure	HVAC	√		
3	Infrastructure	Fire Sprinkler	√		
3	Infrastructure	Structural Framing	√		
3	Interior	Finishes - Flooring	√		
3	Interior	ADA-Drinking Fountains	√		
3	Interior	ADA-Door Levers	√		
3	Interior	Finishes - Wall	√		
3	Interior	Doors	√		
	Code	Exits			
	Code	Dead End Corridors			
	Environmental	Asbestos	(testing recommended)		
	Exterior Enclosure	Windows			
	Site	Drainage			
	Site	Utilities			
	Site	Lighting			

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5.0 COST ESTIMATES

SUMMARY OF SUMMARIES

Item No.	Description	SF	Total	$/SF
1	1525 Sherman	165,930	8,822,245	53.17
2	Contingency on Above		w/ Above	
	Subtotals:	**165,930**	**8,822,245**	**53**
3A	IT \ Teledata (Relocate Exstg Only)	109,365	490,472	4.48
3B	Move Management		See Add Alternate	
3C	Flex Space		Excluded	
3D	Public Art	165,930	102,115	0.62
4	Contingency on Above		Excluded	
	Equipment \ Art Subtotal:		**592,587**	**4**
	Base Price \ Equipment \ Art Subtotal:		**9,414,832**	**57**
5	Escalation - 6.75% per year		Excluded	
6	Contingency on Above		Excluded	
	Escalation Subtotal:		**Excluded**	
	Base Price \ Equipment \ Art \ EscalationSubtotal:		**9,414,832**	**57**
7	Design Fees at 8% per State of CO Direction		753,187	4.54
8	Contingency on Above		Excluded	
	Design Fee Subtotal:		**753,187**	**4.54**
	Base Price \ Equipment \ Art \ Design Fee Subtotal:		**10,168,019**	**61**

PROJECTED COST OF CONSTRUCTION IN 2014 DOLLARS	**10,168,019**	**61**

ADD-ALTERNATE				
9	Move Management	165,930	236,617	1.43
10	FF&E	109,365	2,734,125	25.00
11	Escalation - 6.75% per year		Excluded	
12	Contingency on Above		Excluded	
	Subtotals:		**2,970,742**	
	ADD-ALTERNATE SUBTOTAL:		**2,970,742**	**18**

SYSTEM BY SYSTEM SUMMARY

Item No.	Description	SF	Total	$/SF
1A	Replace Fire Alarm System	165,930	643,728	3.88
1B	Escalation		Excluded	
System 1 Replace Fire Alarm System Subtotal:			**643,728**	**4**
2A	Replace Emergency Generator	165,930	161,301	0.97
2B	Escalation		Excluded	
System 2 Replace Generator Subtotal:			**161,301**	**1**
3A	Add Exterior Wall Insulation	165,930	1,188,172	7.16
3B	Escalation		Excluded	
System 3 Modernize Elevators Subtotal:			**1,188,172**	**7**
4A	Replace Roof	165,930	638,206	3.85
4B	Escalation		Excluded	
System 4 Replace Roof Subtotal:			**638,206**	**4**
5A	Repair/Replace Exterior Sealant	165,930	569,715	3.43
5B	Escalation		Excluded	
System 5 Replace Exterior Sealants Subtotal:			**569,715**	**3**
6A	Balance of Project Scope	165,930	5,871,124	35.38
6B	Escalation		Excluded	
Balance of Scope Subtotal:			**5,871,124**	**35**
System by System Subtotal:			**9,072,245**	**55**
7	IT \ Teledata (Relocate Exstg Only)		490,472	2.96
8	Flex Space		Excluded	
9	Public Art		102,115	0.62
10	Contingency on Above		Excluded	
Equipment \ Art Subtotal:			**592,587**	**4**
Systems \ Equipment \ Art Subtotal:			**9,664,832**	**58**
11	Design Fees at 8% per State of CO Direction		773,187	4.66
12	Contingency on Above		Excluded	
Design Fee Subtotal:			**773,187**	**5**
Base Price \ Equipment & Art \ Design Fee Subtotal:			**10,438,019**	**63**

PROJECTED COST OF CONSTRUCTION IN 2014 DOLLARS	**10,438,019**	**63**

ADD ALTERNATE				
13	Move Management	165,930	236,617	1.43
14	FF&E	109,365	2,734,125	25.00
15	Escalation - 6.75% per year		Excluded	
16	Contingency on Above		Excluded	
	Move Management Subtotal:		**2,970,742**	
	Add Alternate Subtotal:		**2,970,742**	**18**

FF&E DETAILED ESTIMATE - BASE

Estimate By:	Kyle Hoiland
Date:	10-Apr-14
Reviewed By:	Chris Squadra
Date:	10-Apr-14
Total Cost:	**$3,326,712**

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	FF&E				
	Employee Workstations (1 employee:250 sf) Minor Repair to Existing Only	109,365	SF	25.00	2,734,125
	Small Conference Rooms (1 small room:2,500 sf)				w/Above
	Large Conference Rooms				w/Above
	SUBTOTAL FF&E				**2,734,125**

	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	697	EA	324.09	225,861
	PC Workstations (relocate existing only; see below)				Excluded
	CAT 6E Data Cabling	697	EA	310.20	216,182
	State of CO Servers, Routers, Wireless Access and IT Equipment not listed above				Excluded
	SUBTOTAL IT\TELEDATA				**490,472**

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	Flex Space				
	Flex Space for Multiple Moves and\or Tenant Holdover (per floor)				Excluded
	SUBTOTAL MOVE LEASED SPACE				**Excluded**

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	Public Art				
	Art in Public Spaces Allowance at 1.0% of Construction Cost	1	LS	102,114.88	102,115
	SUBTOTAL PUBLIC ART				**102,115**

TOTAL COST -					**3,326,712**
					20

	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	Move Management				
	Moving Labor, Material, Equipment & Supervision (1 Moves)	664	EA	281.27	186,681
	Relocate PC Workstations (1 Moves)	664	EA	75.24	49,935
	SUBTOTAL MOVE MANAGEMENT				**236,617**

DETAILED ESTIMATE - SUMMARY

				165,930
Item No.	**Description**	**$/SF**	**Total**	**Total w/Burdens**
DIV 2	EXISTING CONDITIONS	2.39	396,207	604,148
DIV 3	CONCRETE	1.58	262,833	400,775
DIV 4	STONE & MASONRY	6.52	1,082,422	1,650,507
DIV 5	METALS	0.85	140,726	214,582
DIV 6	WOODS & PLASTICS	1.47	244,448	372,740
DIV 7	THERMAL PROTECTION	4.40	730,525	1,113,925
DIV 8	OPENINGS, DOORS, WINDOWS	0.30	50,000	76,241
DIV 9	FINISHES	8.11	1,346,282	2,052,848
DIV 10	SPECIALITIES		EXCLUDED	
DIV 11	EQUIPMENT		EXCLUDED	
DIV 12	FURNISHINGS		EXCLUDED	
DIV 13	SPECIAL CONSTRUCTION		EXCLUDED	
DIV 14	CONVEYING SYSTEMS	0.00	0	0
DIV 21	FIRE SUPPRESSION		EXCLUDED	
DIV 22	PLUMBING	0.69	115,000	175,355
DIV 23	HVAC	4.33	718,477	1,095,553
DIV 26	ELECTRICAL	0.90	150,000	228,724
DIV 27	COMMUNICATIONS	2.71	448,841	684,405
DIV 31	EARTHWORK		EXCLUDED	
DIV 32	EXTERIOR IMPROVEMENTS	0.60	99,973	152,442
DIV 33	UTILITIES		EXCLUDED	
DIV 34	TRANSPORTATION		EXCLUDED	
	Subtotal Direct Construction Costs	**34.87**	**5,785,733**	**8,822,245**
	Allowance for Historical / Memorial Markers		100,000	
	Direct Cost Subtotal with GFP	**35.47**	**5,885,733**	
	Material Testing	0.35%	20,600	
	Owner's Design & Preconstruction Contingency	10.00%	588,573	
	Owner's Construction Contingency (after NTP)	5.00%	294,287	
	Permits	1.90%	111,829	
	Total Direct Construction Costs	**41.59**	**6,901,022**	
	Standard General Conditions (GC's Onsite Overhead)		1,228,753	
	Subtotal NET Construction Cost	**49.00**	**8,129,775**	
	GC's Off-Site Overhead & Profit	4.60%	369,370	
	GC's General Liability Insurance	0.90%	73,168	
	Construction Cost w/o Bonds & Escalation	**51.66**	**8,572,312**	
	Builder's Risk Insurance	1.50%	127,085	
	Performance & Payment Bond	1.20%	101,668	
	Bid Bond	0.25%	21,181	
	Tap Fees		Excluded	
	Bidding Reserves		Excluded	
	Total Estimated Cost of Construction	**53.17**	**8,822,245**	

DETAILED ESTIMATE

Estimate By:	Kyle Hoiland
Date:	10-Apr-14
Reviewed By:	Chris Squadra
Date:	10-Apr-14

Building GSF: 165,930 **Total Cost:** $5,785,733

DIV 02	Description	Quantity	Unit	TOTALS Cost/Unit	TOTALS Total Cost
	EXISTING CONDITIONS / BUILDING DEMOLITION				
	Concrete Sawcutting & Grinding	1,500	LF	5.00	7,500
	Asbestos Testing	1	LS	10,000.00	10,000
	Demo Building Interior as needed	54,757	SF	2.00	109,514
	Demolition Disposal & Dumping Fees	10,140	CY	3.40	34,477
	High Pressure Wash @ Exterior Building	53,226	SF	1.40	74,517
	Remove Existing Caulking at Exterior Building Joints	10,135	LF	2.50	25,338
	Remove Roof (Allowance)	18,437	SF	1.30	23,968
	Scaffolding (erect & dismantle)	532	CSF	198.95	105,894
	Clean Brass Building Signage	1	AL	5,000.00	5,000
	SUBTOTAL EXISTING CONDITIONS/DEMOLITION				**396,207**

DIV 03	Description	Quantity	Unit	TOTALS Cost/Unit	TOTALS Total Cost
	CONCRETE / FOUNDATIONS				
	Repair Concrete Cracking & Spalling @ Interior Slabs / Concrete Walls / Ceilings / Entries	54,757	SF	4.80	262,833
	SUBTOTAL FOUNDATIONS				**262,833**

DIV 04	Description	Quantity	Unit	TOTALS Cost/Unit	TOTALS Total Cost
	MASONRY				
	Exterior Granite/Marble Stone Repair, where necessary (Allowance)	13,307	SF	75.00	997,995
	Repair/Replace Coping @ Penthouse	250	LF	75.00	18,750
	Repair Brick @ Penthouse & Parapet (Allowance)	1	AL	15,000.00	15,000
	Recaulk Exterior Cut Stone Masonry Panels	10,135	LF	5.00	50,676
	SUBTOTAL MASONRY				**1,082,422**

DIV 05	Description	Quantity	Unit	TOTALS Cost/Unit	TOTALS Total Cost
	METALS				
	Replace Interior Stair & Patio Railing (code compliance)	1,008	LF	128.20	129,226
	Fall Protection Systems (Allowance)	1	AL	10,000.00	10,000
	New Rail Extension at Rooftop Hatch	1	LS	1,500.00	1,500
	SUBTOTAL METALS				**140,726**

DIV 06	Description	Quantity	Unit	TOTALS Cost/Unit	TOTALS Total Cost
	WOODS				
	Rough Carpentry Wood Materials	165,930	SF	0.75	124,448

	Rough Carpentry Labor	2,500	HRS	48.00	120,000
	*Time & materials for miscellaneous building shoring, safety railings/barricades, blocking, substrate repairs				
	SUBTOTAL WOODS				**244,448**

DIV 07	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	THERMAL & MOISTURE PROTECTION				
	Cladding Patching/Repair @ Exterior & Penthouse	5,323	SF	9.50	50,565
	Remove & Replace Roof System	22,124	SF	14.90	329,648
	Waterproof Repair @ Exit Doors & Sub-Basement Area	3,500	SF	18.75	65,625
	Metal Fascia, Flashings, & Trims Repair (Allowance)	1	AL	75,000.00	75,000
	Scuppers, Gutters & Downspouts Repairs (Allowance)	1	AL	25,000.00	25,000
	Add Insulation to Exterior Wall	53,226	AL	2.40	127,743
	Miscellaneous Caulking & Sealants @ Interior	11,149	LF	5.00	55,744
	Replace Hatch @ Penthouse	1	LS	1,200.00	1,200
	SUBTOTAL THERMAL				**730,525**

DIV 08	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	OPENINGS				
	Door & Door Hardware Replacement or Repair As Needed (Allowance)	1	AL	50,000.00	50,000
	Windows Replacement As Needed (Allowance)				Excluded
	SUBTOTAL OPENINGS				**50,000**

DIV 09	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	INTERIOR FINISHES				
	Gyp Bd Wall Patching	82,965	SF	1.10	91,262
	Gyp Bd Ceiling Patching	54,757	SF	3.10	169,746
	ACT Ceiling Repair / Tile Replacement	124,448	SF	3.21	399,476
	Gyp Bd Detailing @ Int Soffits, Cols, etc.	1	LS	15,000.00	15,000
	Replace Carpet @ Sub-basement Floor	18,437	SF	3.28	60,472
	Clean/Repair Natural Stone/Tile Flooring	16,593	SF	10.00	165,930
	Repair/Replace VCT	922	SF	1.80	1,659
	Vinyl Base	26,885	LF	2.20	59,147
	Wall Coverings Repair / Replacement	8,297	SF	3.90	32,356
	Clean/Repair Natural Stone/Tile @ Walls	7,560	SF	10.00	75,600
	Paint Gyp Bd Walls & Ceilings w/2 Coats Latex	137,722	SF	0.60	82,633
	Miscellaneous Accent Painting Allowance	1	LS	15,000.00	15,000
	Remove & Repaint Corrosion @ Existing Windows (Allowance)	336	EA	500.00	168,000
	Exterior Metal Paint of Steel Members at Rooftop	1	AL	10,000.00	10,000
	SUBTOTAL INTERIOR FINISHES				**1,346,282**

DIV 10	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	SPECIALITIES				
	Movable Office Partitions System				Excluded
	New Bath Hardware				Excluded
	Fire Extinguishers (2 per floor)				Excluded
	Corner Guards				Excluded
	Code Required Signage				Excluded
	Wayfinding Signage				Excluded

	Access Ladders				Excluded
	SUBTOTAL SPECIALTIES				EXCLUDED

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				Excluded
	Plastic Laminate Countertops Repairs				Excluded
	Solid Surface Countertops Repairs				Excluded
	Copy / Print / Mail Center Casework				Excluded
	Kitchen / Break Room Casework				Excluded
	Window Roller Blinds - no valances, installed				Excluded
	Display Cases				Excluded
	Marker Boards				Excluded
	Tackboards				Excluded
	Office Furnishings & Other Building FF & E				Excluded
	SUBTOTAL FURNISHINGS				EXCLUDED

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				
	Modernize Elevators				Excluded
	SUBTOTAL CONVEYING SYSTEMS				0

DIV 21	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	FIRE SUPPRESSION				
	Fire Sprinklers - Full Replacement				Excluded

	Backflow Prevention				Excluded
	FDC				Excluded
	Booster Pump (Allowance)				Excluded
	SUBTOTAL FIRE SUPPRESSION				**EXCLUDED**

DIV 22	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	PLUMBING				
	Demo Existing Plumbing				Excluded
	Plumbing Systems - Full Replacement				Excluded
	Repairs to Existing Roof Drains & Piping	1	LS	15,000.00	15,000
	Provide ADA Fixtures, where necessary (Allowance)	22	EA	2,500.00	55,000
	Insulation @ Lavatory & Mechanical Piping	1	AL	45,000.00	45,000
	SUBTOTAL PLUMBING				**115,000**

DIV 23	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	HVAC				
	HVAC - Replace Condensing Unit	165,930	SF	1.33	220,687
	HVAC - Various Repairs to Piping	165,930	SF	3.00	497,790
	Upgrade HVAC Controls				Excluded
	SUBTOTAL HVAC				**718,477**

DIV 26	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	ELECTRICAL				
	Demo Existing Electrical Outlets & Replace				Excluded
	Replace Panels				Excluded
	New Electrical Wiring & Conduit @ New Lighting				Excluded
	Add Lighting @ Stairwells Only				Excluded
	Remove Light Fixtures throughout Building				Excluded
	Replace Light Fixtures w/ LED				Excluded
	Replace Emergency GenSet	1	LS	150,000.00	150,000
	UPS System				Excluded
	Solar Photovoltaic System				Excluded
	Wind Turbine System				Excluded
	Replace Lightning Protection System				Excluded
	SUBTOTAL ELECTRICAL				**150,000**

DIV 27	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	DATA / COMMUNICATIONS				
	Fire Alarm System - Full Replacement	165,930	SF	0.92	152,656
	Data & Communications Conduit - Minor Upgrades	24,890	SF	1.90	47,290
	Security Systems	165,930	SF	1.50	248,895
	Data & Communications Equipment				Excluded
	A/V Equipment				Excluded
	SUBTOTAL COMMUNICATIONS				**448,841**

DIV 032	Description	Quantity	Unit	TOTALS	
				Cost/Unit	Total Cost
	SITE IMPROVEMENTS				
	Paving				
	Site Grading for Positive Drainage	1	LS	15,000.00	15,000
	Replace Existing Asphalt Road around Bldg				Excluded
	Concrete Replacement at Sidewalks	10,000	SF	6.50	65,000
	Concrete Sidewalks - Seal Cracks	1	LS	5,000.00	5,000
	Repair Concrete Cracking & Spalling @ Exterior Slabs	2,500	SF	4.80	12,000
	New 6" x 12" F.R. Concrete Curb & Gutter or Valley Pan	100	LF	29.73	2,973
	Landscape				
	Fine Grade Topsoil				Excluded
	Sod Repair				Excluded
	Irrigation Repair				Excluded
	SUBTOTAL SITE IMPROVEMENTS				**99,973**

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 UTILITES				**EXCLUDED**

TOTAL COST -					**5,785,733**
					35

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