CONDITIONS ASSESSMENT AND RESTORATION PLAN THE SAVANNAH POWDER MAGAZINE

Lominack Kolman Smith Architects | 2019

PROJECT TEAM

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EXECUTIVE SUMMARY

Initiated to provide a foundation of documentation to guide short and long term preservation and restoration efforts of the Savannah Powder Magazine in Savannah, Georgia, the development of this report works to ensure the building's restoration is performed in a sensitive, logically phased and sustainable fashion; that the building's architecture and history is recorded; that its historic and architectural integrity is retained; and that the evolution of powder magazine development in Savannah is recorded.

Investigation Chronology and Methodology

Following the receipt of a Southern Intervention Fund grant from the National Trust for Historic Preservation in December 2018, the Historic Savannah Foundation and the City of Savannah collaborated with Lominack Kolman Smith Architects (LKSA) to perform the assessment.

The project team comprised of Ellie Isaacs, Principal Investigator of Lominack Kolman Smith Architects; Intern Architects Amanda Ridings and Cassie Beckwith of Lominack Kolman Smith Architects; Greg Jacobs, Managing Partner of Landmark Preservation LLC; and Cody Tharpe and Emily Hilson, Structural Engineers of Tharpe Engineering.

Using a methodology of historical research, investigation, examination, analysis and recording, the team set out to gather information regarding the existing physical condition and history associated with the Powder Magazine.

Summary

Working to provide a comprehensive analysis of the building's current condition, proposed use, and a comprehensive history, every effort was made to provide appropriate historic restoration recommendations.

Within the **Developmental History** section, the "Chronology of Powder Magazine Development in Savannah" provides a narrative of the first powder magazines in the City followed by a "Historical Background of the Ogeechee Road Powder Magazine," including a comprehensive list of its known Magazine Keepers.

The **Condition and Repair** section describes in detail the existing condition of the Powder Magazine with recommendations provided in accordance with the Secretary of Interior's Standards for Restoration included as Appendix A. The section begins with a general physical description of the exterior and interior followed by detailed material descriptions. At the end of each material section, lists of bulleted recommendations are provided for easier understanding.

In **Planning for the Future**, a "Prioritization and Phasing Schedule" outlines the tasks and phases in which it is recommended that the restoration take place. Following, a "Restoration Cost Estimate" provides the client knowledge of costs in order to allocate funds to properly restore the building. The "Conclusion" provides recommendations for future preservation efforts for the site and its future use.

Several appendices have been included as reference tools. Each appendix greatly informed the report. Their inclusion allows readers to "go to the source."



CHRONOLOGY OF POWDER MAGAZINE DEVELOPMENT IN SAVANNAH

SUMMARY

The development of municipal powder magazines located within the City of Savannah is a bit disarrayed. At least six known magazines existed prior to the magazine located on Ogeechee Road. The earliest known magazine was located at Fort Oglethorpe starting in 1750. Following were the magazines located in Fort Halifax in 1759, Fort Provost in 1780, and Fort Wayne in 1813, all of which were located in the same general area of Trustee's Garden.¹ Although the first four magazines were related to military installations, it is known that municipal ammunition would likely have been held in the same location as military ammunition. The first powder magazine noted as "City Powder Magazine" is shown on an 1818 map of Savannah and was located on the block between Arnold and Randolph streets, between President and Broughton streets, one block south of Broughton. However, due to the threat of another explosion so close to the development springing up in the downtown area, several concerned citizens composed a letter written to the Mayor and Aldermen requesting that the Magazine be moved to an isolated area outside of the city. Around 1870 the Powder Magazine was moved to Springfield Plantation, which was a short distance west of the city on West Gwinnett Street, less than 2 miles from City Hall. Today the last remaining magazine is located less than five miles west of City Hall on Ogeechee Road.





Detailed Plan of Fort Wayne in Savannah, 1821, drawn by Captain Poussin. Courtesy of Armstrong University online, The Fortresses of Savannah by Jim Byous

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(Above) Plan of the Powder Magazine at Fort Prevost in Savannah, 1780. (Left) Map of Fort Prevost, 1781. Both courtesy of online database of the Library of Congress

THE BEGINNING (1812-1870)

The area once on the edge of the city known as Magazine Ward, across the street from the southern boundary of Trustee's Garden once held the first five magazines.² The ward name derived from the City of Savannah magazine, a depository for gunpowder and arms used by city police, local military and ships moored in the harbor. While boats were in the harbor, a city ordinance demanded that they store their powder in the secure location in order to protect the waterfront.³ This area had been a parade ground for military barracks for over fifty years. No detailed information or maps has been found on the powder magazines located within Fort Oglethorpe or Fort Halifax, however, local historians believe they were both in the same general area of Trustee's Garden near the current Morris Center. The powder magazine within Fort Provost was located to the very east of the walled enclosure. According to the rectangular plan, the walls were thick, and a central stair led underground to a single large room.

Originally built as part of the city's defenses around 1812-1813, the magazine at Fort Wayne was set within the eastern limit of an earthen fortification that surrounded the city during the War of 1812. The map shows the Magazine in the same general area as the previous, however it is located more to the west and has a different overall form. The form appears similar to the powder magazine located on Ogeechee Road today, a smaller square room at the front and a more rounded shape to the rear room. It is unknown if this is the same magazine or if a new one was constructed. However, a highly detailed rendering of Fort Wayne was completed by Captain Poussin in 1821. The plan shows a contoured earth barrier, and the powder magazine is an angled rectangular structure with two projections on two facades. An 1818 map of the City of Savannah drawn by I. Stouf shows two square buildings, one sitting horizontally and one vertically, labeled as Pow.^d. Mag.^e, and located north of the W-shaped barracks building. An 1820 map of the City of Savannah completed by McKinnon and Wright label two square buildings, one smaller and one larger, as "R", or the Heavy Artillery Ground and Magazine, which is located on Charles Harris Esq. Land. On both of these maps, Broughton Street had not yet extended past East Broad Street, and the Magazine is drawn to be directly in line with the middle of the street. In 1825 the use of the magazine at Fort Wayne was granted by the United States to the City of Savannah.⁴



DEVELOPMENTAL HISTORY



On October 26, 1831, an article in the *Daily Savannah Republican* reported, "We have just returned from witnessing the most awful sight which it has ever fallen to our lot to witness. About three quarters past 12, the town was alarmed by an explosion and report, which shook many of the largest brick buildings on, and near the Bay. It was soon circulated about that the Magazine at the lower end of the town was blown up. Such, unfortunately proved to be the case. It was the building formerly owned by the Heavy Artillery, and used as the City Magazine. On proceeding to the scene of misfortune, we were struck with a sight – the bare recollection of which causes our blood to curdle. The building was in flames, at least the lower part, for the upper part was blown away and lay scattered around in various sized masses. One solid mass of brick and mortar, at least 5 feet square, was thrown over the fortification in the rear, at least 30 feet from the building. Scattered at various distances, and in various places, lay the disjointed limbs of some of those unfortunate beings who were engaged in and near the building at the time of explosion. We saw one entire body lying near the building, and about twenty feet from it was presented the horrible spectacle of a body torn in two in the middle –the whole lower extremity was in some other direction. We understood that some bodies had been removed. The left arm and shoulder of a white man, and the foot of a black, were found in the adjacent marsh.

The precise number of lives lost it is impossible to ascertain at this moment of excitement. The loss is computed at from 7-10 – the greater number blacks. Several persons were very much hurt, but they received prompt assistance. We understand that this awful calamity was occasioned by the indiscreet use of an Iron adze, instead of a wooden one, in coopering a cask of powder. The persons who suffered were chiefly employed in transporting powder from this magazine to another of greater security."⁵ Oddly this was the only article written about this dramatic event. Given that the magazine wasn't moved to Springfield Plantation until 1870, it is unclear what magazine the men were transporting powder to and why. In October 1835, an advertisement in the Daily Savannah Republican stated that the building committee was "authorized to receive proposals and to contract for the building of walls around the doors of the powder magazine in Fort Wayne, and for having the doors and floors repaired as may be found necessary."6 This suggests that the building may have still been used as a magazine, along with the City Powder Magazine. In October 1837, a committee was appointed by City Council to petition Congress for ownership of the Fort site, but without success. The next year the City offered to buy the Fort, however the Secretary of War replied that he thought the government's interests would be best served by cutting the property up into building lots. Finally, in the fall of 1838 an Act of Congress was secured authorizing the City to open Reynolds Street through the tract.⁷

Years prior, the powder magazine building was removed from other structures, however, by 1850 Savannah was growing rapidly as new homes and buildings had sprung up in the area. Workers hauling powder came and went from the magazine often, and the danger of doing so was high. The risk, now emphasized in legal requirements, specified non-spark-generating clothing including woolen stockings.⁸ The citizens within the vicinity lodged serious complaints concerning the danger to life and property from the powder magazine being in its present location, and the proposed lengthening of Randolph Street towards River Street rendered it even more necessary.⁹



Enlarged Map of the City of Savannah, 1856. Courtesy of online database of Hargrett Library, University of Georgia Libraries

SPRINGFIELD PLANTATION (1870-1897)

Due to the dangers posed to citizens, the magazine on the eastern side of the city was abandoned, and City Council authorized the purchase of an existing Confederate powder magazine located on Springfield Plantation.¹⁰ The Powder Magazine was located on Lot Number 45, and bounded by Gwinnett Street to the south, Hall Street (renamed Hadley Street today) to the north, and Magazine Avenue to the east. The magazine on Springfield Plantation, along with two acres of land, was procured for \$1,005. The building was adapted and repaired, and a keeper's dwelling was built at a cost of \$2,607.¹¹ A plan with improvements was drawn by R. M. Bailey, however none of the drawn buildings are labeled, so it is unclear which structure is the powder magazine. No other documentation was able to be found on the existing Confederate magazine that was adapted. There were objections to the location at Springfield, being that it was too distant and too difficult to access from the City. However, the avenues leading to the magazine had been thoroughly repaired and the distance from the Court House wasn't more than two miles. Other sites were considered, however, there was a universal objection from property holders and a more convenient site couldn't be obtained without extravagant cost.¹² Correct in his reasoning, Alderman Smith's decision to move the magazine relieved tensions in the downtown neighborhood as well as in City Hall.¹³



Plan of lot, Powder Magazine location at Springfield Plantation. City of Savannah Engineering Department East / West Maps Item # 3121-008 W-402. City of Savannah Municipal Archives, Savannah, Georgia.



Survey Plan of Powder Magazine with improvements location at Springfield Plantation. City of Savannah Engineering Department East / West Maps Item # 3121-008 W-391. City of Savannah Municipal Archives, Savannah, Georgia.

By 1896, the magazine is located within the official city limits at Springfield Plantation. On average, the magazine held 175,000 pounds of powder and 17,000 pounds of dynamite.¹⁴ Situated as it was, the magazine stood not far from the water works building as well as railroad tracks. Passing engines would send sparks towards the non-fireproof building, and thus it was considered a menace to public safety once again. The keeper's house was in disarray and the magazine was considered an old structure even before it was turned into the city powder magazine. It was recommended that the magazine was to be moved at least five miles beyond the city limits and placed within easy access to a railroad to facilitate storage or removal of the explosives.¹⁵ An average of 94,000 pounds of powder and 6,000 pounds of dynamite were stored during 1897.16



Lot map of Powder Magazine location at Springfield Plantation. City of Savannah Engineering Department East / West Maps Item # 3121-008 W-506. City of Savannah Municipal Archives, Savannah, Georgia.

DOWNTOWN SAVANNAH (1871-1903)

Starting in 1871, small "powder box" magazines with the limited storage of 400 pounds of powder were now being permitted in the business section of the city for immediate need. All portable magazines were to be made "of heavy sheet iron, with overlapping and projecting cover, and is to have a capacity of holding not exceeding four hundred (400) pounds of powder." An ordinance had to be obtained from City Council and two were permitted this year. The first was on September 23, 1896 to Charles A. Conklin and Company, located on Bay and Barnard streets near their warehouse, Number 8 on Williamson Street. The second was to S. Gukenheimer and Sons on November 18, 1896, located "in front of their place of business on the corner of Bay and Jefferson Streets, to be located by the Committee on Streets and Lanes, near the walk on the north side of Bay Street."17 No records were found between 1897 and 1898. Two portable magazines were permitted in 1899. The first was on August 23, 1899 to Edward Lovell's Sons, located on the north side of Bay between Jefferson and Whitaker streets. The second was permitted in 1899 to James M. Dixon and Company to remove their powder box from its present location (unlisted) to the grass plat on the eastern extremity of Liberty Street on the corner of Randolph.¹⁸ The following year, an ordinance was permitted on January 24, 1900 to the Savannah Grocery Company to remove their powder box from its present location (unlisted) to the corner of Jefferson and Bay streets.¹⁹ No records were found between 1901 and 1902. An ordinance was permitted to H. H. Peeples and Sons on January 7, 1903 to keep a powder magazine on the strand on the north side of Bay Street, between Barnard and Jefferson streets.²⁰ It's interesting to note that these smaller, arguably less secure, magazines were permitted in the downtown area given the history of the public's objections to keeping powder in such a populated area.

HISTORICAL BACKGROUND OF THE OGEECHEE ROAD POWDER MAGAZINE

"It is proper to call your attention to the fact that the proximity of the old powder magazine to the water works was a constant menace, and through the energy and good judgment of Alderman John W. Smith, Chairman, and the members of his committee, a new site was purchased and a new powder magazine erected." The old property was advised to be sold to the best advantage. The old powder magazine was sold on April 5, 1904 for \$1,500.²¹

Originally included in the west portion of the Vernon Tything Farm Lot #5 in Heathcote Ward, the land on which the Powder Magazine currently sits was conveyed by Jacob Cohen to the City of Savannah on March 10, 1898. The new Powder Magazine was completed in eight months on November 10, 1898. The cost of the project was \$3,650 for the building and \$800 for the twenty acres of land, \$4,450 total. The average storage of the Magazine was 96,000 pounds of black powder and 8,500 pounds of dynamite.²²

The Magazine has two rooms and is approximately 1,700 square feet. The building has been referred to as one of the sturdiest structures in Chatham County. A Savannah Morning News article dated November 12, 1898 states, "The Magazine is strongly built and is fire-proof. There is no wood about it except in the roof, and between that and the explosives there is a thick brick arch. The floor consists of a thick layer of asphalt, and the same material is used on the walls and ceiling. It is said the entire building might be placed in water and that not a drop could find entrance. The doors are of steel and are very heavy. By the strength of the structure and other precautions that have been taken it is believed it would be impossible for an explosion to take place through any ordinary accident."23



Original blueprint plat of site for powder magazine, known as the Jacob Cohen Tract. City of Savannah Engineering Department East / West Maps Item # 3121-008 W-222. City of Savannah Municipal Archives, Savannah Georgia.

The Magazine was designed "after modern plans" by locally renowned architects Alfred S. Eichberg, who also designed the Telfair Hospital and the Central of Georgia Railway building (now SCAD's Eichberg Hall), and Hyman W. Witcover, who also designed Savannah City Hall, the Scottish Rite Temple, and Sacred Heart Catholic Church. The Magazine is the only known extant building that the two designed together and is one of the last known Eichberg buildings in Savannah.²⁴ The Magazine was built by contractor John R. Eason. The Magazine features elements of the Gothic Revival design style, which explains why so many refer to the Magazine as "the castle in the woods." Such features include the crenelated parapet and crenelated door surrounds at each entrance. It is significant to note that the City government chose to build an architecturally pleasing, high design structure for a utilitarian purpose far from the public eye.

The Magazine operated under City of Savannah municipal use for 65 years and had 29 known Keepers. "Back then, if someone wanted dynamite to blow up a stump or clear out land, they'd have to get a special permit from the courthouse, take the order to Morgan's (then located at 111 West Broad Street), and then wait for Morgan's to get the dynamite from Clarke."²⁵ Barney Clarke was the 'dynamite lady,' otherwise known as the caretaker of the magazine for more than sixteen years. The Magazine was closed in 1963 and Clarke's job was terminated due to the expense of keeping operation with only one steady customer. The building was then leased to that customer, Morgan's, Inc for eight years, from May 1963-March 1971, to store gunpowder and explosives. The Morgan's lease was terminated on March 31, 1971 due to the Fire Chief's concerns of storing explosives within the City.



Morgans, Inc. Ad. 1958. Courtesy of Savannah City Directory, Ancestry.com

CARETAKER'S COTTAGE

Starting in June 1964, adjoining property owner Mr. Harry E. Martin Jr. argued that the Powder Magazine and the Caretaker's Cottage were located partially on his property. In August of that same year the Caretaker's Cottage was appraised. The appraisal states, "This subject frame bungalow with metal roof consists of entrance stoop; living room; three bedrooms; bathroom; central hallway and kitchen dining area.

The structure contains 780 square foot in the main body of the house, 60 square foot of open porch and a 300 square foot unveiled addition that serves as the kitchen-dining area. Quality of construction is very poor, particularly in the kitchen-dining area." On October 9, 1964 a new plat was recorded – delineating the previous property line and the new property line. With the new agreement, the Powder Magazine would remain on City of Savannah property and the Caretaker's Cottage would be conveyed to Mr. Martin's for a cost of \$1,050.00. This is the only known document showing the previous relationship between the Caretaker's Cottage and the Powder Magazine. On October 12, 1964, Mrs. Clarke received notice from the City Manager that she was being evicted from the Caretaker's Cottage, which she was still renting from the City, due to the change in ownership. Mrs. Clarke lived on the premises with her husband and three children, two boys and a girl. Sometime thereafter, the Caretaker's Cottage was moved to its current site within Red Gate Farms.

Redrawn and recorded Plat, dated October 9, 1964. City of Savannah, Engineering Department Retrospective Maps Collection Item # 3121-009 29-20C. City of Savannah Municipal Archives, Savannah, Georgia.

The Caretaker's Cottage is a central hallway cottage, featuring four rooms - two rooms on each side of the central hallway. There is a full width porch on the front and a smaller porch on the rear. Brick fireplaces are in each room, along the shared room wall. The original 6/6 wood frame windows, wood decorative molding and wood flooring are still in place. All interior plaster was removed due to a previous incomplete renovation in 2005. In recent years, the clapboard siding has been painted white, however through peeling paint, the original color appears to have been the same green paint found on the iron door casings of the Powder Magazine. Prior to the cottage being moved, there was an enclosed bathroom addition on the rear porch that was removed, as well as the kitchen-dining addition that was removed. Traces of the bathroom addition can be seen on the exterior wall and the ghost line of the mirror that hung over the sink. After the cottage was moved, the building was placed on raised wood piles. Currently the Caretaker's Cottage is in a state of disrepair.

RECENT HISTORY (1970s to present)

Throughout the 1970s and the early 1980s, multiple offers to purchase the Magazine property were submitted, including an offer in 1971 from Mr. Harry E. Martin Jr. Appraisals in the 1970s stated that the Magazine building was obsolete and didn't have any historical or economic value. Their suggested "highest and best use" for the property was as a mobile home sales operation, a used car lot, light manufacturing, warehousing or truck terminal. Thankfully the City of Savannah didn't follow their recommendation to raze the building and sell the salvaged brick. In 1982, Chatham County offered to buy the tract of land in order to create a county recreation facility but to no avail. However, the property wouldn't be officially annexed into the City of Savannah boundaries until July of 1989. In that year, the City used land towards the rear of the property for a borrow pit to assist in building the southwest bypass and the Casey Canal Parkway. Over time, the building sat vacant and visibility of the Magazine from Highway 17 was lost. The Magazine was more or less forgotten by the general public.

City Council declared the Powder Magazine Tract to be sold at auction as surplus property in April 1990. Preservation efforts began that same year by Tommy Holland and the Powder Magazine Park Committee in response to a developer who planned to demolish the Magazine. The Committee's goal was to restore the structure and turn the area into a historical site and nature park. Elizabeth Lyon, State Historic Preservation Officer, stated on May 2, 1990, "This structure appears to be unique in the state of Georgia. We are unaware of the existence of similar historic structures anywhere in the state outside of military installations. Moreover, this utilitarian structure is further distinguished by its unusual architectural design, attributed to the noted local architect, A. S. Eichberg, and by its association with the growth and development of Savannah in the late 19th century. Taken together, these factors suggest that the Savannah Powder Magazine would meet the criteria for listing in the National Register of Historic Places." However, no formal National Register application was submitted and due to lack of funding, no efforts were completed until the cause was revived in 2018. Tommy Holland reached out to principal Anne Smith of Lominack Kolman Smith Architects to see if she was interested in reviving the cause. Her late father, Ronald Kolman, worked closely with Tommy Holland on the Powder Magazine Park Committee in the 1990s. Anne connected Tommy to begin collaborating with Ellie Isaacs, Historic Preservation Specialist at LKSA.

Savannah Powder Magazine · 1898

THE HISTORY

The Savannah Powder Magazine was built in 1898 and used until 1963 for storing powder and dynamite. The Magazine was built by John R. Eason for the City of Savannah approximately five miles for model of available approximately live times from downtown on Ogeochee Road. The building was designed by Savannah architects Alfred Eichberg and Hyman Witcover, who are credited with noted local buildings as City Hall, SCAD's Eichberg Hall, Teflar Hospital and the Scottish Rift Temple. The Savannah Powder Magazine is thought to be the out wrunisiend newder macazine in sev to be the only municipal powder magazine in ex-istence in Georgia. Both local and State historians feel it would easily qualify to be listed on the Na-tional Register of Historic Places.

THE PLAN

The Powder Magazine Park Committee organiz-ed in May of 1990 for the purpose of developing a plan to convince the MPC and City Council that there is a need and public support for, The Powder Magazine Historic Site and Nature Park. This pro-Magazine Historic Site and Nature Park. This pro-ject wouldbe designed, constructed, and operated by volunteers; and funded by donations from cor-porations and individuals like you. The Powder Magazine Building would be used as a min-museum or exhibit hall and the 15 acres of land as a nature or scenic park.

THE REASON WE NEED YOU

THE REASON WE NEED YOU Here is an opportunity for the people of this com-munity to come together and do something for ourselves without asking City Hall for any money, we, the Powder-Magazine Park Committee, are committed to see this project through. With your involvement, through signing petitions and letters of support, we will convince the MPC and City Coun-cil of the value of this Historic Site and Park for all to enjoy. So come on Savannah lets do something so that we can say, **WE DID 1T1**

POWDER · MAGAZINE · PARK · COMMITTEE P.O. BOX 24051 / SAVANNAH, GA 31403 / (912) 927-4258

Flyer of Powder Magazine Park Committee. Courtesy of Georgia Historical Society

Savannah Powder Magazine during Powder Magazine Park Committee Campaign, 1990s. Tommy Holland (left) and Ron Kolman (right). Photo provided by Anne Kolman Smith.

LIST OF KNOWN MAGAZINE KEEPERS

The Magazine Keeper was a City position elected by City Council and approved by the Mayor.

1807	1852	
Mr Blogg	Joesph Lippman	
November 1807 - 1813	1853 - 1854	
Samuel Brownjohn	William Burke	
1813	1855	
George Atkinson	James L. Haupt, resigned January 25	
1819	1855 -1857	
Samuel Brownjohn	William Burke, resigned May 28	
1819 - 1832	1857 - 1861	
John A. Beaulard	J. H. Steegin, resigned September 25	
1824	1865	
Joseph Felt	George Murken	
1833 - 1841	1866 - 1869	
John Haupt	H. L. Davis	
1842	1870 - 1874	
Peter Worthington	Edward Powers	
1843	1877-1888	
Joseph E. Silveira	James Kelly	
1844	1889-1896	
James D. Masson, resigned March 7	Charles A. H. Umbach	
William Canuet	Mr. Umbach was the keeper of the Magazine from 1889 to 1896. His son, J. H. W. Umbach became the keeper after his death until 1900. J. H. W. Umbach resigned from the position, reasoning given being ill health. Mayor Meldrim then appointed his brother	
1845		
Joseph E. Silveira		
1846-1848	W. C. Umbach.	
Elisha Hager	1897-1898	
1849-1851	J. H. W. Umbach	
Joseph E. Silveira		

1899

W. C. Umbach

A Savannah Morning News article dating from December 2, 1898, states that Umbach presented bills to the merchants who stored explosives in the old magazine (at Springfield Plantation). He is charging them the regular fees for the removal of their goods from the old magazine to the new magazine recently erected by the City on Ogeechee Road. The merchants are refusing to pay them, holding that they didn't order the powder removed, and that they aren't responsible for any action of the City in changing the location of its store house for explosives.

W. F. Gilbert

A *Savannah Morning News* article dating from May 10, 1899, names Gilbert as a young man who came here from Georgetown, South Carolina several years ago. He was previously connected with the river and harbor work, and later ran a grocery store at the corner of New Houston and Whitaker streets.

1900

W. F. Gilbert

1901

W. F. Gilbert

Troup B. Hodges

MRS. BARNEY CLARK PREPARES TO ENTER CITY'S 65-YEAR-OLD POWDER MAGAZINE ON U.S. 17 She's Been the Official Carelaker of the Fortress-Like Building for a Dozen Years 1902

Troup B. Hodges

Originally from Savannah and formerly a clerk in the Central of Georgia offices, Hodges returned to Savannah from South Africa, where he was enlisted in the Boer Army. Upon return he secured a position at the Powder Magazine. However, several weeks later he was arrested on the charge of lunacy due to the use of narcotics and resigned his position. Less than two months after his arrest near Montgomery, Alabama, Mr. Hodges met a terrible death by throwing himself in front of a passenger train and was instantly killed.

M. J. Martin

1903 - 1906

M. J. Martin

1912 - 1922

Henry W. Baughn

Mr. Baughn was a Savannah police sergeant with twenty nine years of service, from 1881-1911. He served as keeper of the Magazine from 1912 until his death in 1922.

1922

Charles H. Bell

1947-1963

Barney Clarke (Lady Dynamite)

Mrs. Clarke, locally known as 'Lady Dynamite,' was the keeper of the Magazine for either the last 11 or 16 years of its municipal use. There is a discrepancy with her years of service in several *Savannah Morning News* articles.

Savannah Morning News Article published on April 17th, 1963; courtesy of Georgia Historical Society, Powder Magazine Vertical File

PART TWO CONDITION AND REPAIR

SITE

OVERVIEW

The Powder Magazine currently sits hidden from the road and unknown to the passerby; located on Ogeechee Road, otherwise known as Highway 17, five miles outside the Savannah National Register Landmark Historic District. The once undeveloped area has seen sprawl development consisting of manufacturing warehouses, retail strip malls, gas stations and fast food restaurants. The roughly fifteen acres surrounding the Powder Magazine site are heavily wooded and unmanaged, a rare occurrence in the area. Located several feet behind the Magazine is a sunken area where fill was taken for the use of the nearby overpass construction in 1989. An active Seaboard Coast Line Railway runs diagonally through the rear of the property.

Deficiencies

The amount of tree growth surrounding the site has led to moisture issues. Potential additional issues on the structure in the future are eminent. Trees, and therefore their associated root systems, located close to the structure can undermine the integrity of the concrete stucco parging, brick footings and brick walls. Potential heavy winds could cause the trees or their branches to fall directly onto the structure. Due to the isolation of the area, the site has also been used as a temporary shelter for homeless people and a dumping ground for tires, building materials, and trash.

Recommendations

The area directly surrounding the Powder Magazine should be cleared of all foliage in a fifteen to twenty-foot radius at minimum. The previously cleared larger pathway, which leads from the Magazine to Ogeechee Road, should be re-cleared for access and visibility. The excess of trash and debris piles should be removed and these areas regularly maintained.

Aerial shot taken of Powder Magazine and surrounding area

EXTERIOR

OVERVIEW

Through the trees, the Powder Magazine stands tall with a splayed Portland stucco parging base and a single wythe red brick veneer on the exterior. The exterior single wythe brick veneer has an air gap, with the interior walls being composed of two wythe brick. The red brick has similar colored mortar, except under the Portland stucco parging. The mortar under the concrete is lighter in color. There is a crenelated and corbelled parapet above the tops of the brick barrel vaults and now non-existent roofing system. The roofing system has remnants of vegetation that was recently cleared. Metal leader heads and downspouts once existed at four places along the parapet wall, however only two leader heads remain. The front facade features a rectangular marble plaque to the left of the front entrance that states: "P. W. Meldrim, Mayor. John W. Smith. W. W. Owens. T. J. Davis. A. L. Weil. S. Krouskoff. Committee on City Lots. Eichberg and Witcover, Architects. John R. Eason, Builder. 1898." The exterior features several iron circular vents for airflow throughout the building and three, square iron framed light boxes. It is suggested that the light boxes once had glass on the interior to protect explosives from the flame. The flame would be lit by opening an iron hinged door on the exterior. There is an internal iron pipe that leads up through the parapet for the gas emissions to escape. A Savannah Morning News article on October 18, 1898 states, "It is lighted from the outside, where all lamps, matches and other things likely to produce fire are handled." There are two, segmented arch entrances, one on the front and one at the rear. Both entrances have bluestone thresholds and are double hinged - an iron door was on the exterior and a wood door on the interior. Both doors have segmented arch frames. Currently, only one exterior door and one interior door remain. Each entrance has brick crenelated and corbelled entrance surrounds.

Front facade of the Powder Magazine.

Front entrance surround looking into the Powder Magazine.

DEFOLIATION

Deficiencies

Vegetation, including small trees, and a thick layer of soil exists primarily on the top of the brick barrel vaults, and has spread to the crenelated brick parapet and crenelated brick entrance surrounds.

- Defoliation should be completed using an articulated man lift during the removal process.
- Initial cut back of foliage should be completed using hand shears, or chain saw when necessary, without any root removal. Under no circumstances should vegetation be pulled or forcibly removed from masonry.
- Smaller, running roots should be treated topically, taking precautions to limit the application area to the roots themselves, and limiting general overspray onto adjacent masonry.
- After product has dwelled for an appropriate amount of time per manufacturer's specifications, remaining foliage and root systems are to be removed gently by hand to ensure the integrity of masonry is not diminished. If during removal process, root or vegetation cannot be removed without causing damage to masonry, then alternate means of removal should be considered. This will be considered on a case by case basis depending on masonry conditions while in the field. Alternate means may need to be coordinated with a qualified historic preservation mason.
- Any adverse structural conditions discovered during defoliation of the roofs should be consulted with a qualified structural engineer. Shoring on the interior may be deemed necessary to complete defoliation.
- After the Defoliation process, and before the roofing system is reconstructed, a temporary protective cover should be placed over the exposed barrel vaults.

Above and below - Vegetation on the roof, before first round of topical spray was completed by the City of Savannah in 2019.

Vegetation on the roof, current conditions after first round of topical spray was completed.

MASONRY AND STUCCO CLEANING

Deficiencies

There is biological growth, atmospheric grime, staining, and minor efflorescence present on the exterior masonry walls and stucco base materials.

- Defoliation should occur as detailed in the previous Defoliation Section before any cleaning work is to take place. Before cleaning the entire surface, testing should first be performed in inconspicuous locations according to product specifications using the gentlest means possible.
- Apply D/2 Biological Solution, agitated gently using non-metallic bristle brushes, and then rinsed with water (low pressure). This process will need to be repeated in order to ensure that biological growth has been stunted.
- Efflorescence will need to be removed using an appropriate cleaner (Prosoco or equivalent).
- Clean masonry walls using Ultimate Stone & Masonry Cleaner (Dumond), and then rinse with water (low pressure). This process will need to be repeated as needed to ensure that soiling is removed as much as reasonably possible. It should be noted that mineral staining/streaking may not be able to be completely removed without risking permanent damage to brick faces.

Front facade, current conditions of biological growth on brick and Portland stucco base.

GRAFFITI REMOVAL

Deficiencies

In the summer of 2019, red and purple tinted graffiti was tagged on the Magazine's west facades. Graffiti was put on both the masonry and stucco materials. It appears as though the spray paint used has not penetrated the brick face, however it did penetrate the stucco base material and has caused deep inset stains.

- The means and methods described in the report produced by Sam Beetler, Department of Cemeteries Conservation Coordinator, included as an appendix to this document and titled, "Savannah Powder Magazine Graffiti Removal Test," will be used as a basis for cleaning.
- Before cleaning the entire material, additional testing should first be performed in inconspicuous locations according to product specifications using the gentlest means possible to ensure no damage to historic masonry or stucco occurs.

Graffiti located on the west and south west facades.

ROOF

A full structural assessment of the roof could not be completed at the time of survey due to visibility through the existing vegetation and soil.

Based on the architecture of the time period and construction methodology, it is likely, although unconfirmed, that a wood frame with plank sheathing roofing system with standing seam metal cladding, in a hipped design with pitch as high as the parapet would have been in place. The roof would then slope to the exterior scuppers.

Deficiencies

The wood roof framing and cladding system is currently non-existent. The single wythe, brick corbeled vaults are exposed, allowing an unplanned and unmanaged vegetation layer to grow. The roof is covered with now dead vegetation and a thick layer of soil. A brick parapet surrounds the roof. The parapet is intact with areas of concern on the western rear facade. An internal gutter system is hidden below the parapet and the previous hipped roofing system would have pocketed into it. Evidence on the parapet shows a tar line where the previous counter-flashing system stopped. Iron tie backs are connected to the parapet but disconnected at one end due to the loss of the roofing framing system. Iron pipes project through the brick vault structure approximately 8.5" to provide air to the rooms below. The iron pipes are believed to have been housed within the previous roofing system.

Recommendations

Defoliate as recommended in Defoliation Section.

- Occupancy of the roof during defoliation, cleaning, and repointing should be staged to limit the
 number of workers. The roof should be cleared in small sections, advancing to new sections upon
 evaluation of the previous section for structural stability. Using an articulated man lift and/or additional structural shoring from the interior of the Magazine is highly recommended where required
 during the removal process.
- Drill holes into larger stumps and carefully inject with herbicide, such as Garlon or equivalent.

Once Defoliation is complete, the top flange of the structural I-beams should be exposed in selected areas to determine the extent of corrosion due to the exposure to the elements from the lack of a roofing system.

The brick of the vaults and parapet should also be assessed to determine its structural integrity. Due to its exposure to the elements and the vegetation, the mortar's integrity has been compromised. It is highly anticipated that the majority of the exterior brick vaults and sections of the parapet will need to be repointed following the recommendations in the Selective Repointing section. Additional treatment to improve water resistance may be explored, such as lime-washing. Consolidators and waterproofing should be avoided because the brick will ultimately be protected by an external roof surface.

Localized reconstruction of the parapets, including collector head locations, where loose or missing bricks occur will be required as specified in the Masonry Repair section.

Parapet as seen from the roof.

Brick vaults and iron pipes under vegetation layer.

SCUPPERS, LEADER HEADS, AND DOWN-SPOUTS

Deficiencies

The four scuppers, leader heads and downspouts are missing. Only two terne-metal leader heads, one on the south facade and one on the north-east corner remain, however they are splitting at the seams and exhibit general oxidation, deterioration and loss of integrity.

Recommendations

Scuppers and leader heads will need to be fabricated to match the originals and placed in their original locations. Existing leader heads will need to be repaired and restored if possible to match the existing in form and material. New downspouts shall be directed away from the building subgrade and daylighted at minimum 15-20 feet away from the building. Precise locations will need to be determined on site.

Example of intact terne-metal leaderhead on rear facade.

MASONRY REPAIR

Deficiencies

Numerous masonry deficiencies exist that warrant repair. Deficiencies include cracking, as well as broken, missing and spalling bricks at various locations on the exterior and interior walls. Specific locations of deficiencies occur at the brick entrance surrounds due to the spread of vegetation growing on the roof as well as above the front facade light well due to an internal iron pipe corrosion. The western portion of the parapet and the previous scupper locations, likely due to their improper removal, feature multiple deficiencies.

Some interior walls exhibit loss of the fired brick face due to moisture intrusion from the open pipes in the corbelled vaults and from the exposure of the vaults to the elements. These conditions led to rising damp within the interior space, therefore the moisture moved into the bricks causing the unbonding of the fired brick face.

- Cracked, spalled and broken bricks should be repaired using a compatible repair mortar (Lithomex or equivalent), where possible. Repairs or in-kind replacement brick will need to match existing adjacent brick in compressive strength, color, texture, and profile as accurately as possible.
- Missing and severely damaged bricks should be replaced in-kind where possible. Replacement bricks will need to match existing in color, texture, dimension, and bonding as accurately as possible.
- Open, abandoned penetrations should be repaired with either mortar (if in mortar joint) or with suitable masonry repair mortar. All filled voids should match adjacent material in compressive strength, texture, color, and profile as accurately as possible.
- Cracks, where identified, shall be repaired by installing small diameter stainless steel "stitching" rods in mortar joints. This method may need to be combined with other repair methods listed above. Cracks should be evaluated on site on a case by case basis.
- Masonry should be selectively repointed where required using in-kind mortar as detailed in the Selective Repointing section.

Example of damaged brick at scupper locations along the parapet.

Example of damaged brick.

Front facade, loss of brick due to internal iron pipe corrosion.

Front facade brick entrance surround. Loss of brick and biological growth present.

Parapet conditions featuring mortar loss, resulting in loss of brick

SELECTIVE REPOINTING

Deficiencies

Failed and missing mortar is prevalent on the exterior brick veneer and interior brick walls at various locations.

- All mortar joints should be carefully excavated using hand tools to remove loose or disintegrated mortar and other debris. Under no circumstances should grinders be used.
- All unstable and inappropriate mortar shall be selectively removed as required to ensure soundness. Deficient mortar should be excavated to a depth of one and one-half times the width of the joint to achieve a solid substrate. Great care will be taken not to damage the brick faces.
- Bricks will need to be selectively repointed where required using in-kind lime-based mortar. New mortar will need to match existing historic mortar in compressive strength, texture, color, and joint profile to match adjacent existing material as accurately as possible.
- Following repointing, all masonry surfaces should be cleaned to remove dirt, grime, and mortar residue as required, as detailed in the previous Masonry and Stucco Cleaning Section.

Example of significant mortar loss and loss of fired brick face.

PORTLAND STUCCO PARGING

Deficiencies

The entire base of the building has a Portland stucco parged coating of varied thickness over stepped brick. Over time moisture has infiltrated the stucco and brick substrate through a neighboring crack on the south west facade, causing moisture to be trapped and cause the stucco to become detached from the brick face. This separation is most prevalent on the west and north west facades of the building.

Recommendations

The entire parged Portland stucco base of the building needs to be sounded. If material has unbonded from the brick but is still attached to the brick face, injection grout should be used to re-establish the bond, to fill any existing voids or where in need of infill. If parging coating has already been lost, masonry will need to be repointed first as necessary following the guidelines of the Selective Repointing section, and then be recoated using Portland stucco of the same color, texture and strength.

Example of loss of stucco coating at base.

Above - Current conditions portland parged stucco with graffiti, West facade.

Below - evidence of cracking in stucco. Further detailed in Sturctural Report in Appendix.

MARBLE PLAQUE

Deficiencies

The rectangular white marble plaque located on the north, or front, facade commemorates the mayor, architects, builder, and date of the Magazine. However, over time the marble has become nearly illegible due to deep biological staining.

- Before cleaning the entire material, testing should first be performed in inconspicuous locations according to product specifications using the gentlest means possible.
- Clean marble plaque in order to remove soiling, atmospheric grime, and biological growth using Prosoco Revive or equivalent or other product deemed appropriate based on previous testing.
- Upon the conclusion of cleaning the plaque surface if deep-set staining is still present, a poultice treatment is recommended. Stain removal shall be conducted using Prosoco Sure Klean Marble Poultice. Poultice would then need to be applied and then the plaque will be wrapped in plastic while remaining in situ. Poultice will need be allowed to dwell for twenty-four to forty-eight hours. Poultice would then be removed and a low-pressure water rinse will ensue. Due to the age of the plaque, it is expected that some staining may be permanent.

Marble plaque located on the front facade.

IRON

Deficiencies

Light Wells – Three square light wells are located on the North, East and West facades. They are currently permanently open due to the loss of the hinged exterior iron cover as well as their interior cover. The interior cover is believed to have been glass that slid upwards due to the brick formation seen on the interior and glass remnants found in one of the openings. Each light well has an iron pipe located in the center that allowed ventilation up through the parapet, as evidenced on the North and West facades. Due to being exposed to the elements, the iron light wells have rusted and are starting to corrode in corners from moisture and lack of maintenance.

Vent Grills (photo below) – Fourteen circular vent grills are evenly spaced within the exterior brick walls of the building. The vent as seen on the interior is a rectangular opening in the brick and currently covered in mesh. There is 18" from the bottom of the interior vent to the top of the exterior vent. All grills appear to be rusted open and have varying degrees of rust and corrosion, although most are clogged with debris.

Doors and Door Framing – There is a large, segmental arched doorway on both the north and south facades of the building, approximately 8' tall and 4.5' wide. The iron door frames have remnants of dark green paint and have much less corrosion and rust compared to the other iron features. Only the original iron door for the rear, or south, facade remains. That door is located inside the rear room of the building and is elevated off the floor on a wood pallet. The door is missing central iron rail elements. Each exterior door frame is double hinged. The exterior had an iron door and the interior had a wood door. See Interior: Wood Door for more information.

- Clean debris from vent grills.
- Clean iron using wire brushes to remove rusting and scaling.
- Determine on site if vent grills were ever operable.
- Treat iron with rust converter using Ospho or equivalent.
- Prime with an oxide rich primer and paint with an epoxy finish, Sherwin Williams DTM or epoxy primer and industrial enamel finish.
- Iron door frames should be repainted, color matching the existing dark green paint.
- A paint analysis should be completed in order to match the existing dark green paint. If a clean sample cannot be taken from the door frames the same color is also seen on the Caretaker's Cottage.
- Original iron door repaired in-kind, and the missing door should be recreated based off the matching historic door in joinery, material, design, etc.

Light well as seen from the interior.

Light well as seen from the exterior.

Iron door frame. Features historic green paint.

BLUESTONE THRESHOLD

Deficiencies

The doorways on the north and south facade feature thick bluestone thresholds. Stone exhibits general wear and light staining due to atmospheric grime and biological growth on the exterior.

Recommendations

Bluestone should be cleaned using D/2 Biological Solution, and then rinse with water (low pressure).

Bluestone threshold. Rear entry.

INTERIOR

OVERVIEW

The Powder Magazine's interior floor plan is symmetrical and contains two rooms, a smaller square entrance room and a larger elongated-octagon rear room. A central segmented arch doorway, the same size as the entrance doors, separates the two spaces. The doorway is located in a two wythe, load bearing brick wall. All interior walls are composed of two wythe brick with an air gap between the exterior single wythe veneer. The interior has lime washed walls, a lime washed brick barrel-vaulted roof with steel reinforcement, and an asphalt floor that still holds the impressions of the powder kegs that were once stacked atop it.

Three quarter view of rear room, facing north-east.

MASONRY

WALLS

Deficiencies

The walls have a worn lime washed coating with a black asphalt coating underneath. The masonry exhibits spalling and mortar loss at the base and mid-section portion of the walls due to moisture intrusion caused by the loss of the fired brick face. The loss of the fired brick face is due to moisture intrusion from the open pipes in the corbelled vaults and from the exposure of the vaults to the elements. These conditions led to rising damp within the interior space, therefore the moisture moved into the bricks causing the unbonding of the fired brick face. The west and south-west walls exhibit black soot on the surface due to fires started by homeless people seeking shelter in the building.

BARREL VAULTS

Deficiencies

The masonry vaults in the ceiling exhibit the same worn lime washed coating with a black asphalt coating underneath as the connecting interior masonry walls. Each vault is separated by an exposed I beam plate and supported by iron rebar. There are five equal vaults in the front room and twelve equal vaults in the rear room. There is a smaller vault on each end of the rear room to accommodate the half octagon form.

Recommendations

The interior brick walls and barrel vaults should be selectively repointed as needed using the methods outlined in the Selective Repointing section. If biological growth is present, brick should be gently cleaned selectively using the methods outlined in the Masonry and Stucco Cleaning section. Great care should be taken to focus work only on areas necessary so as not to cause an adverse effect on historic lime wash and asphalt coating. Given the uniqueness of these coatings, before cleaning the interior materials, additional testing should first be performed in inconspicuous locations according to product specifications using the gentlest means possible to ensure no damage to the historic coatings occurs.

Example of moisture intrusion and loss of fired brick face on the interior, rear room.

Location on west and south-west facades exhibiting black soot on interior walls.

STRUCTURAL IRON

Deficiencies

As seen on the interior of the building, the structural I-beam framing elements and rebar reinforcements between the barrel vaults appear to have a light layer of surface corrosion, as expected due to the moisture intrusion and lack of maintenance. Greater degradation is imminent with no treatment.

- Clean iron using wire brushes to remove surface corrosion.
- Upon completion, iron elements should be re-examined by a qualified structural engineer to determine integrity. If integrity is compromised due to material loss or significant corrosion, additional reinforcement may be required.
- Treat iron with rust converter such as Ospho or equivalent.
- Prime with an oxide rich primer and coat with an epoxy finish or Sherwin Williams DTM, or epoxy primer and industrial enamel finish.

Structural iron, typical view, in rear room.

FLOORING

Deficiencies

The flooring material is an asphalt coating over an unknown substrate used to prevent sparks, and therefore fires, during the moving of the metal barrels across the floor. The flooring exhibits circular indentations known to be caused by the weight of the stacked gunpowder barrels. The flooring exhibits imperfect areas and a small area that appears melted due to fires started by the homeless.

Selective removals were not completed to discover material of the flooring substrate due to no evidence of deterioration of the substrate material and to not destroy the historic integrity of the flooring.

Recommendations

Flooring should be vacuumed and swept to remove the built-up sand and debris. No chemical cleaners should be used on the flooring, as the reaction with the floor material is unknown. Depending on the future use and traffic through the building, a floating catwalk or other mechanism that would not detract from the significance of the space may be needed to protect the floor.

Typical conditions of flooring.
WOOD DOORS

Deficiencies

The exterior had an iron door and the interior a wood frame door. The existing interior wood door is painted white and has a segmental arched frame, a large open upper panel that was possibly screened for further ventilation, and a paneled bottom portion. This single original wood door is currently held in storage. The current condition of the remaining door is unknown at the time of survey.

Recommendations

Once the original wood door is able to be assessed, further recommendations can be made as to the means and methods of repair. Once the original wood door is repaired, the missing door should be recreated using the original door as a design template.



Original interior wood door.

PART THREE PLANNING FOR THE FUTURE

PRIORITIZATION AND PHASING SCHEDULE

Due to cost, it is assumed that the restoration of the Powder Magazine will be completed in phases. If the project does occur in a single phase the items listed below should still be completed in the order in which they are listed. Priorities have been ordered based on the conditions seen during site visits when this report was written.

First Phase:

- Defoliate entire structure
- Graffiti removal
- Selective masonry repair (to include roof substrate, interior parapet, scupper locations)
- Repointing/parging on top side of brick vaults
- Structural (if required to reinforce vaults)
- Roof System (to include framing, sheathing, finish to be determined following vegeta-tion removal and flashing)
- Restoration and Replacement of Scuppers, Downspouts and Leader heads

Second Phase:

- Masonry Cleaning and Repair
- Marble Plaque Cleaning
- Stucco Base Cleaning and Repair
- Iron Cleaning and Repair
- Threshold Bluestone Cleaning
- Flooring
- Restoration and Replacement of Interior Wood Doors
- Restoration and Replacement of Exterior
 Iron Doors

RESTORATION COST ESTIMATE

The scope of work budgeted for each item is based on the description found in the Conditions Assessment. It is important to note that the figures provided for each expenditure are **estimates only**. As a course of normal action, it should be the responsibility of the owner of the Savannah Powder Magazine, otherwise known as the City of Savannah, to proactively solicit estimates from pre-qualified historic preservation contractors as a planning strategy to ensure the availability of adequate funding.

However, it is important to note that inflation, as well as increases in labor and material costs, are likely to occur and should be accounted for accordingly.

Other variables may include the availability of funding, rate of deterioration of building elements, and timing of grants. Due to these typical characteristics of a phased restoration, the budget may require updating to ensure that the figures and timing of projects is realistic.

The following Restoration Cost Estimate for the Savannah Powder Magazine was completed by Greg Jacobs of Landmark Preservation, LLC. Landmark Preservation, LLC recommends and performs all work within the guidelines established by the Department of the Interior Standards for Historic Preservation and subscribes to the Code of Ethics of the American Institute for the Conservation of Historic Works.

Any work completed on the Savannah Powder Magazine, during the restoration as well as the continued maintenance of the building, should be performed by individuals who have proven, hands-on experience with historic buildings. The Secretary of Interior's Standards for the Treatment of Historic Buildings should always be followed, with no exception. Additionally, the National Park Service Department of the Interior has produced a series of technical historic preservation briefs for the purpose of providing guidelines for performing maintenance and repair tasks for historic buildings that should be referenced.



Greg Jacobs of Landmark Preservation, LLC inspecting parapet and roof conditions.

CONCLUSION

This project could not have been undertaken without the support of many individuals' support or without our project team. Special thank you to Tommy Holland for kick-starting this project again; Luciana Spracher, Director of the City of Savannah Municipal Archives and her staff; Bret Bell, Assistant City Manager of the City of Savannah; Daniel Carey, former President, and Ryan Arvay, Historic Properties Coordinator, both of the Historic Savannah Foundation.

The best way to preserve any historic building is through its continued use. If a building has been unoccupied for any number of years, it is essential to understand its condition and materiality in detail. The aim of this report is to provide such information.

It should be acknowledged that although unsuccessful grassroots preservation efforts and demolition were attempted in the past, the building has remained a testament to early building practices and is in above-standard condition, ready for the next chapter of its story.

In order for the site to continue its history, a master plan for the development of the fifteen acre site with the preservation and the utilization of the Powder Magazine as a primary focus should be created. Due to the Magazine's architectural significance, and that people seek out the Magazine to visit, as well as use it for class projects, photo shoots and video shoots, the Powder Magazine building and site should be a publicly accessible space. The site could be adapted for walking trails and recreational activities. The building could be adapted as an event space or as an interpretative museum space.

Although the original land surrounding the Powder Magazine has changed over time, it is recommended that efforts be made to move the original Caretaker's Cottage back to the current site or reconstruct the Cottage within site boundaries. Although it could not sit in its original location due to the construction of an O'Reilly's Auto Parts store, the Cottage is an important aspect of the Magazine's history. As previously mentioned, the original Cottage currently sits on Red Gate Farms property, is unused and at risk of increased deterioration due to lack of maintenance. The Cottage should also be restored and possibly adapted to support the site.

Through preliminary research, it is highly likely that the Savannah Powder Magazine is the only remaining municipal powder magazine, built for and still owned by a municipality, in the United States. Research revealed most magazines were typically built for military installations or railways and most are museum spaces today and are privately owned.

Due to the building's local, state and national significance, it is highly recommended that the building be listed on the National Register of Historic Places. The Savannah Powder Magazine is eligible for inclusion due to Criteria A, B and C: "Criterion A: That are associated with events that have made a significant contribution to the broad patterns of our history;" "Criterion B: That are associated with the lives of significant persons in our past;" and "Criterion C: That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction."

In conjunction with the National Register Nomination, a roadside Georgia Historical Society Marker is recommended to give passersby knowledge of the historic site outside the Savannah National Register Landmark Historic District. The marker would give the Magazine more recognition at its location due to the site being out of view from the street.

Due to the Magazine being located outside the Savannah National Register Landmark Historic District, in order for the Powder Magazine to be protected from future demolition threats or development impacts, a text amendment would need to be added to the local ordinance to recognize that the Magazine is a significant building worthy of local protection. Bringing attention to the significance of the building, local designation would provide protection against any future threats.

ENDNOTES

1 Email with Jim Byous 8/15/19.

2 Jim Byous, "The Most Historic Ground." page 11

3 Ibid.

4 Thomas Gamble Jr. "A History of the City Government of Savannah, GA..." page 111

5 "Two O'clock, P.M." Daily Savannah Republican (Savannah). October 26, 1831

6 "In Council, October 15th, 1835." Savannah Morning News (Savannah). October 16, 1835

7 Thomas Gamble Jr. "A History of the City Government of Savannah, GA..." page 111

8 Jim Byous, "The Most Historic Ground." page 11

9 "Report of John Screven, Mayor of the City of Savannah, for the year ending September 30, 1870..." page 14 10 Ibid.

11 Ibid.

12 Ibid.

13 Jim Byous, "The Most Historic Ground." page 11

14 "Report of Herman Myers, Mayor of the City of Savannah, for the year ending December 31, 1896..." page 179 15 Ibid.

16 "Report of Hon. P.W. Meldrim, Mayor of the City of Savannah, for the year ending December 31, 1897..." page 162

17 "Report of Herman Myers, Mayor of the City of Savannah, for the year ending December 31, 1896..." pages 386-387

18 "Report of Hon. P.W. Meldrim, Mayor of the City of Savannah, for the year ending December 31, 1898..." pages 338-339

19 "Report of Herman Myers, Mayor of the City of Savannah, for the year ending December 31, 1900..." page 300

20 "Report of Herman Myers, Mayor of the City of Savannah, for the year ending December 31, 1903..." pages 336-337 21 "Report of Hon. P.W. Meldrim, Mayor of the City of Savannah, for the year ending December 31, 1898..." pages 12-13

22 Ibid. page 137

23 "The City's New Magazine Will be Occupied Monday." *Savannah Morning News* (Savannah), November 12, 1898 24 Email from Howard Bellinger, Executive Director of the Metropolitan Planning Commission to A.A. Mendosa, City Manager on Significance of Savannah Powder Magazine, October 17, 1990

25 "Grant kick-starts restoration of city's Powder Magazine." Savannah Morning News (Savannah). February 17, 2020

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"The City's New Magazine Will be Occupied Monday." Savannah Morning News (Savannah). November 12, 1898.

"To Build a New Magazine." Savannah Morning News (Savannah). January 2, 1898.

"Two O'clock, P.M." *Daily Savannah Republican* (Savannah). October 26, 1831.

APPENDICES



NATIONAL PARK SERVICE DEPARTMENT OF THE INTERIOR THE SECRETARY OF THE INTERIOR'S STANDARDS FOR PRESERVATION

- 1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
- 2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.
- 3. Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.
- 4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
- 5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.
- 6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color and texture.
- 7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
- 8. Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Source: https://www.nps.gov/tps/standards/four-treatments/treatment-preservation.htm

SAM BEETLER II

GRAFFITI REMOVAL TESTS REPORT



On Monday May 20th 2019 tests were conducted to determine a course of action for the removal of graffiti on the old powder magazine located next to Lumber Liquidators at 4131 Ogeechee Rd (highway 17) Suite 101, Savannah, GA 31405. Four products were tested in various locations. M.E.K. Substitute, Xylene, and Lacquer thinner were mixed to the consistency of peanut butter and applied to multiple areas of the wall. They were allowed to dry and then cleaned with the soft bristle brush and water to remove the poultice residue. Their locations are highlighted below in the photographs. Each product showed minimal effectiveness at removing the graffiti from the rough surface of the concrete. It was determined that scrubbing with water and the brush was more effective than the poultice applications.

Jasco Paint and Epoxy Remover was the fourth product tested in two other areas. The product was applied to two red letters and allowed to dwell for 15 minutes, the recommended time on the container. This partially dried out so another application was applied and scrubbed with a short bristle brush. The residue was removed using a clean rag. Five more applications were applied to the letters, agitated and removed with a clean towel. The rough surface of the cement did not allow for a scraper to affectively remove the residue from the surface. The remaining residue was then scrubbed with xylene and removed with a towel in an attempt to remove the remaining residue. The area was cleaned the following day using water and a soft bristle brush.

Jasco paint and epoxy remover was also tested on the purple paint over the brick. A small amount of the product was applied to the surface of the brick and immediately agitated. The paint immediately detached from the surface of the brick and was wiped clean with the brush and a clean towel. The area was cleaned the following day using water and a soft bristle brush. A small area was cleaned just above this spot using only water and the soft bristle brush and was quite effective.

These tests show that the paint has not adhered well to the masonry surfaces. The poultice tests were not any more effective as cleaning with water and a soft bristle brush. The M.E.K. substitute also left residue on the masonry surface. The exception is the Jasco paint remover. It is recommended that further tests be completed using a low PSI pressure washer that can safely lift the paint from the surface of the masonry. It may be effective to test the low PSI pressure washer in conjunction with the paint stripper or equivalent product to determine the most effective method of removal. Photos below detail the placement of the various products on the wall surfaces.

Sam Beetler II Dept. of Cemeteries Conservation Coordinator



Example of graffiti



Poultice tests applied to both red and purple graffiti



Poultice tests removed and areas scrubbed with water and soft bristle brush



Detail of graffiti before testing



Detail of poultice application



Detail of graffiti after poultice removal and scrubbing with water and soft bristle brush



Second detail of graffiti before testing



Detail after testing Jasco paint and epoxy stripper



Detail after cleaning with water and soft bristle brush



Third detail of graffiti before testing



Detail after testing with Jasco paint and epoxy stripper



Detail after cleaning with water and soft bristle brush

THARPE ENGINEERING

STRUCTURAL REPORT



November 12, 2019

Mr. Jerry Lominack Lominack Kolman Smith Architects 301 W. Broughton Street PO Box 1587 Savannah , GA 31402

Re: Savannah Powder Magazine Structural Assessment Report

Dear Mr. Lominack,

As requested, Tharpe Engineering Group conducted a visual observation of the existing Savannah Powder Magazine on September 26 at 9:00 AM to identify any major structural deficiencies and to recommend necessary repairs. A follow-up site visit was performed on November 11, 2019, following the deforestation of the roof.

Enclosed is a summary of our observations for your use. I trust that this report provides sufficient information to assist in the overall rehabilitation effort. I look forward to speaking with you about the information provided herein, should you have any questions.

Thank you for the opportunity to be of service on this project. Please let me know if you have any questions or require further assistance.

Sincerely,

Tharpe Engineering Group

thanke

M. Cody Tharpe, P.E. GA PE# 034695

Attachments: Savannah Powder Magazine Structural Assessment Report cc: file





Savannah Powder Magazine Limited Condition Assessment 11.12.19





LIMITED CONDITION ASSESSMENT REPORT FOR:

Savannah Powder Magazine

Ogeechee Road, East of Chatham Parkway | Savannah, GA

PREPARED FOR:

Lominak Kolman Smith Architects | October 25, 2019

The following is a summary of the existing conditions documented during our observation of the abovereferenced property, performed on September 26, 2019. The conditions documented herein are the result of visual observation only; no exploratory demolition or testing was performed. Architectural, roofing, mechanical, electrical, or plumbing conditions are not included. This report does not express or imply any warranty of the structure but only addresses the condition of the portion which was readily accessible and observable at the time of inspection. Our opinions, conclusions, and recommendations are based on past Firm experience and are indicative of structural remediation, reinforcement, and modification work customary for similar projects in this area.

1.0 - GENERAL

1.1 - Background

The Savannah Powder Magazine is a historic municipal structure located off of Ogeechee Road, approximately five miles west of the City of Savannah. The structure is secluded in a wooded area between Chatham Parkway and Red Gate Farms Road. Originally constructed as a powder and ammunition storage facility, the building has been abandoned since 1963. A proposed restoration project has been catalyzed by a recent grant awarded to the Historic Savannah Foundation. A full study of the building is required in order to establish rehabilitation requirements.

In order to necessitate our observation, representatives for the City of Savannah have cleared vegetation from the perimeter of the building and on the roof. Full access to the interior was provided, as well.

1.2 - Purpose of Assessment and Scope of Services

The objective of this limited structural assessment is to identify major structural deficiencies and to provide general recommendations for structural rehabilitation and necessary repairs, in accordance with customary structural preservation principles and techniques.

1.3 - Limitations of Assessment

No destructive testing or selective demolition has been performed during the course of this Assessment. Our observations are based on widely-accepted visual inspection and classification techniques, and our recommendations are founded in basic structural theory of masonry. Due to the empirical nature of early masonry design and construction, modern numerical calculations and analytical methods do not necessarily apply. The focus of our observation of such structures lie in the following areas:

• The general condition of the structural elements, such as the clay masonry, mortar, steel or cast iron, and other vertical and lateral force resisting system components.



- Arrangement and dimensions of masonry elements, including wall wythe connections, bond type, vault construction (and inclusion of thrust resisting elements), and the connectivity between these elements.
- The identification and classification of visible failures or deficiencies, such as masonry cracks, corrosion, connection failures, and improper dimensional proportions.

Quantification of the mechanical properties of the materials is outside the scope of this study; however, based on historical data and past experience, we have based our recommendations on strengths and composition encountered in similarly constructed structures of this age in our geographical region.

2.0 - DESCRIPTION OF STRUCTURE

2.1 - General

The Gothic-style building, originally designed by Alfred Eichberg and Hyman Witcover is a two-room structure totaling approximately 1,400 square feet. The exterior of the structure has an intricate masonry veneer which also conceals the window vent pipes. Our firm has been involved with renovations of several projects designed by both Eichberg and Witcover, including SCAD Eichberg Hall and the Scottish Rite Temple and the proportions of the masonry elements and consideration of overall structural behavior documented in this building are repetitive themes noted in their work. The Savannah Powder Magazine was clearly designed and constructed to withstand extreme structural forces, and as a result, despite decades of neglect, the structure appears to be extraordinarily sound.

2.2 - History, Alterations, and Repairs

Constructed in 1898, the Savannah Powder Magazine was originally used as a storage facility for explosive powder and ammunition. Originally, it held barrels of black powder which were replaced with dynamite as technology progressed. The building remained in use through 1963. After being decommissioned, the building has been abandoned with very little continuous maintenance performed. No visible evidence of significant repairs or alterations was documented during our observation.

2.3 - Structural System

The structural system consists of multi-wythe brick bearing walls supporting a vaulted masonry roof structure. The exterior masonry walls consist of three wythes of brick laid in a random bond pattern and an unbonded exterior veneer wythe laid in Stretcher Bond. While this exterior wythe does not appear to be interconnected to the main masonry wall structure by header courses, it likely achieves some cohesive connection through mortar placed between the veneer wythe and the inner wythes. The veneer course was likely included to facilitate the corbeling, entry arches, and parapet ornamentation separately from the structural wall.

The roof structure is comprised of vaulted system of brick jack arches placed between structural steel beams. This one-way system is relatively common in masonry structures, but it does somewhat predate the construction of this building. The selection of this roof system was likely made based on the Architects' use of the system in earlier structures. It is not uncommon for a floor or roof structure constructed in this manner to be overlaid by a concrete slab, which exemplifies an early iteration of composite construction. Floor and roof systems constructed in this manner typically provide very high uniformly distributed load capacities, often in excess of modern-day floor systems designed under current building code requirements.

The arch mechanism is completed by a series of steel rods spanning between the steel beams. These rods transfer thrust or tension forces resulting from the arches bearing on the steel.

Foundation conditions are indeterminate at this time, but based on previous experience with buildings of this age and type, we anticipate that the foundation consists of corbeled masonry footings extending



roughly two to three feet past both faces of the masonry wall. The exterior masonry walls were finished with what appears to be a Portland cement wash at the base, which in addition to the ornamentation value, serves to shed water away from the masonry wall and foundation.

3.0 - OBSERVATIONS

3.1 - Overview

All structural elements are visible from both the interior and exterior of the building. No finishes are in place; however, the interior face of the masonry walls are still sparsely coated with paint, making it difficult to accurately identify brick and mortar properties. Our observations and conclusions are based on the assumption that mechanical properties are uniform between the exterior and interior masonry elements.

The dense vegetation has been removed from the roof, leaving behind stumps and a thick leaf layer. It is my understanding that this layer will be carefully removed to exposed the underlying brick roof. It appears as though the original structure included a wood framed hipped roof, which sloped to the exterior scuppers. The wood roof structure has been completely removed, and the brick has been exposed to the elements; however, the structure appears to be very water-tight. It appears as though the wood roof structure was originally pocketed into the exterior masonry wall and likely spanned to the interior parapet wall, rather than being supported by the brick structure.

3.2 - Visible Deficiencies

The majority of the noted deficiencies documented herein appear to be related to vegetation overgrowth and lack of basic maintenance. The structure is exposed to constant moisture gain and loss which ultimately causes brittle materials like clay masonry and mortar to deteriorate. Further, without proper painting or periodic cleaning, steel and metal elements experience corrosion, similar to what we have observed here. The following is a summary of specific deficiencies noted during our observation:

- There are four specific locations where substantial degradation was observed at scupper locations, likely due to water intrusion and vegetation overgrowth, causing the masonry materials to break down.
- The parapet has experienced damage, particularly at the scupper locations, likely from the vegetation overgrowth.
- Many areas within the exterior masonry system show signs of significant mortar loss. Repointing is necessary at several locations along the exterior façade.
- The south west elevation exhibits a significant vertical crack, which occurs at a corner and propagates through the entire thickness of the wall. While no tree is currently immediately adjacent to this corner, this is likely the result of root upheaval at this corner.
- A vertical crack in the veneer was observed on the north elevation, where a vertical pipe appears to be embedded in the veneer course. This crack is likely caused by stresses placed on the masonry by the corrosion scale on the pipe, which can occupy a volume of five to ten times the original volume of the uncorroded iron.
- Root growth under the foundations likely contributes to localized movement and cracking. However, global foundation settlement does not appear to be a concern.

The masonry generally appears to be in very good condition. The cracks and deficiencies noted above are commonly encountered and are actually much less severe than one would expect for an unmaintained structure of this age.





A key elevation is provided in Appendix B referencing photos of these structural deficiencies, areas of particular concern, and general observations.

4.0 - ANALYSIS/ADAPTIVE REUSE FEASIBILITY

4.1 - Code Requirements (IBC 2012, Chapter 34)

Chapter 34 of the International Building Code states that "Alterations shall be such that the existing building or structure is no less complying with the provisions of this code than the existing building or structure was prior to the alteration". Specifically, the code requirements dictating our preliminary analysis are as follows:

- 1. 3404.3 Existing Structural Elements Carrying Gravity Load Any existing gravity load-carrying structural element for which an alteration causes an increase in design gravity load of more than 5 percent shall be strengthened, supplemented, replaced, or otherwise altered as needed to carry the increased gravity load required by this code for new structures. Any existing gravity load-carrying structural elements whose gravity load-carrying capacity is decreased as part of the alteration shall be shown to have the capacity to resist the applicable design gravity loadsrequired by this code for new structures.
- 2. 3404.3.1 Design Live Load Where the alteration does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads approved prior to the alteration. If the approved live load is less than that required by Section 1607, the area designed for the nonconforming live load shall be posted with placards of approved design indicating the approved live load. Where the alteration does result in increased design live load, the live load required by Section 1607 shall be used.
- 3. 3404.4 Existing Structural Elements Carrying Lateral Load Except as permitted by Section 3404.5, where the alteration increases design lateral loads in accordance with Section 1609 or 1613, or where the alteration results in a structural irregularity as defined in ASCE 7, or where the alteration decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections 1609 and 1613.

Exception: Any existing lateral load-carrying structural element whose demand capacity ratio with the alteration considered is no more than 10 percent greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered.

Based on our understanding of the proposed project, we do not anticipate any alterations or additions to this structure, requiring retrofit strengthening or load-demand capacity ratio analysis. Therefore, all deficient conditions identified shall be considered repairs, as defined by the 2012 International Building Code. Specifically regarding the repair of historic buildings, Chapter 34 states:

3409.1 Historic buildings – The provisions of this code relating to the construction, repair, alteration, addition, restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute a distinct life safety hazard.



Therefore, only conditions found to be deficient require remediation. The extent of repair is limited to that required to return the structural elements to their original capacity. For this structure, the required repairs are relatively minor in nature. See Section 5 of this report for additional information.

5.0 - CONCLUSIONS AND RECOMMENDATIONS

5.1 - Recommendations

Based on our observations, our general recommendations for rehabilitation include:

- 1. The exterior veneer requires repointing. All mortar joints shall be cleaned using a natural or nylon soft-bristle brush to remove loose or disintegrated mortar and other debris. Any joint where the existing mortar is removed to a depth greater than 1/3rd of the brick depth shall be repointed. Care shall be taken to ensure repoint mortar properties match those of the existing mortar, which appears to contain a high ratio of Portland cement. All repointing shall be prepared and placed in accordance with the Department of the Interior National Park Service Preservation Brief 2. "Repointing Mortar Joints in Historic Masonry Buildings" and in compliance with the guidelines set forth by the Secretary of the Interior's Standards for Rehabilitation. See Special Considerations.
- 2. Major vertical cracks, where noted, shall generally be repaired by installing small-diameter stainless steel "stitching" rods in mortar joints. In some areas, injection grouting may be required to remediate delaminated brick wythes, particularly at corroded embedded metal elements, such as pipes. Removal of corroded elements is advisable but should be studied from a preservation standpoint. Removal and dismantling, if approved, shall be performed by hand or with small power tools wherever possible, with minimum disturbance to adjacent work.
- Localized reconstruction of parapets and scupper locations where loose or missing bricks occur will be required. Reconstruction of masonry elements shall match the original configuration of the masonry. Tooth newly laid masonry into existing masonry units using whole units in fresh mortar. See Special Considerations.
- 4. Replacement of Portland cement parge coating at the base of the structure will be required in isolated locations. Removal of damaged parge coating shall be done carefully, as recovered segments indicate that the parge coating is well adhered to the brick face, and loss of brick material is likely. See Special Considerations.
- 5. Corroded structural steel roof framing elements shall be cleaned using a wire brush to remove surface corrosion. Upon completion, the steel elements shall be reexamined by a qualified engineer to determine integrity. Where substantial material loss is present, additional reinforcement may be required. Upon completion of cleaning and reinforcing, all steel shall be coated with a rust inhibitive paint. The top flange of the steel beams should be exposed in selected areas to determine extent of corrosion from exposure since the wood roof structure has been missing.
- 6. By removing the leaf layer in several areas, the existing brick structure was observed. While the brick and mortar show signs of deterioration, largely due to water exposure, the roof structure appears to be structurally sound. Several large root systems are clearly embedded in the mortar and will require careful removal. Occupancy of the roof during cleaning and root removal should be staged to limit the number of workers, and the roof should be cleared in small sections, advancing to new sections upon visual evaluation of the previous section for structural instability.
- 7. The wood roof structure shall be reconstructed to its original form, which appears to be a hipped roof sloping to the exterior scuppers. Pressure treated 2x material shall be utilized, and some detailing to ensure wind uplift resistance will be required.



8. Repointing will likely be required for the entire brick roof surface. Select areas will require patching after root systems are removed. Where voids are created in the vault system, temporary shoring from below will be required. Additional brick treatment to improve water resistance may be explored, but consolidators and waterproofing should be avoided, if possible. In some instances, limewashing can improve water resistance, but it requires retreatment. Because this brick will ultimately be protected by an external roof structure, we do not recommend further chemical or waterproofing treatment.

5.2 - Special Considerations

 Brick and mortar testing may be performed by a qualified testing agency to determine the exact strength and color match for any proposed repair or replacement activities. Based on historical data, we anticipate an allowable compressive stress of at least 300 psi for the brick and mortar construction.

5.3 - Life Safety Issues

Based on our observations, the building is generally structurally sound. No life safety hazards were observed.

6.0 - DISCLAIMERS AND QUALIFICATIONS

The opinions and comments in this report are based on visual observation only. Architectural, roofing, mechanical, electrical, or plumbing conditions are not included. This report does not express or imply any warranty of the structure but only addresses the condition of the portion which was readily accessible and observable at the time of inspection.

7.0 - APPENDICES

- Appendix A Observation Photos
- Appendix B Key Elevations





APPENDIX A – OBSERVATION PHOTOS



Photo 1: Scupper Location with Missing and Deteriorated Masonry



Photo 2: Scupper Location with Deteriorated Mortar Joints





Photo 3: Portland Cement Parge Coating Missing



Photo 4: One-Way Masonry Vault and Corroded Steel Roof System





Photo 5: South West Elevation Vertical Crack (exterior façade)







Photo 6: South West Elevation Vertical Crack (Interior)







Photo 7: North Elevation – Vertical Crack in Masonry Veneer







Photo 8: Remaining Plant Growth on Roof



Photo 9: Continuous Framing Pocket at Parapet





APPENDIX B: KEY ELEVATIONS



West Elevation







South Elevation



North Elevation



ARCHITECTURAL DRAWINGS


















