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DEPARTMENT OF CONSERVATION AND RECREATION



HISTORIC STRUCTURE REPORT

MAGAZINE BEACH POWDER MAGAZINE

CHARLES RIVER RESERVATION
CAMBRIDGE, MASSACHUSETTS

JANUARY 20, 2016



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REPORT SPONSORSHIP



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The Massachusetts Department of Conservation and Recreation (DCR), an agency of the Executive Office of Energy and Environmental Affairs (EOEEA), oversees 450,000 acres of parks, beaches, bike trails, watersheds, dams and parkways. Led by Commissioner Lambert, the agency's mission is to protect, promote, and enhance our common wealth of natural, cultural and recreational resources for the well-being of all.

To learn more about DCR, our facilities and our programs, please visit us at www.mass.gov/dcr. Contact us at mass.parks@state.ma.us, call 617-626-1250, or write to DCR, 251 Causeway Street, Boston, MA 02114.

Funding support for this report was provided by the Cambridge Historical Commission and the Cambridgeport Neighborhood Association.



Cambridge Historical Commission:

Charles M. Sullivan, Executive Director

The Cambridge Historical Commission is the city's historic preservation agency. It is responsible for administering historic districts and designated individual landmarks; advising public agencies and property owners on preservation issues; collecting and disseminating information on the city's history and architecture; maintaining a public archive; and administering Cambridge's Community Preservation Act-funded historic preservation program.



Cambridgeport Neighborhood Association, Inc.:

Bill August, President

Cathie Zusy, Chair, Magazine Beach Committee

The mission of the Cambridgeport Neighborhood Association, Inc. (CNA) is to inform, protect, and organize activities that bring the neighborhood together or improve it and to lobby in its interest. Founded in 2004, it holds informative meetings, advocates for, and engages in action to better the community.

CONSULTANT TEAM

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INTRODUCTION AND SUMMARY

The Magazine Beach Powder Magazine is a key structure in the Charles River National Historic District, located in the Charles River Reservation, a Massachusetts state park located along the banks of the Charles River in Boston, Cambridge, Watertown and Newton. The park is managed by the Department of Conservation and Recreation (DCR), and the section in which the Powder Magazine is located is known as Magazine Beach, after its historic use as a bathing beach.

The building itself is a 2,160 square-foot single level structure built of rough stone, containing approximately 1,500 net square feet of usable area. Since it was constructed in 1819, it has served as a gunpowder magazine, a bathhouse, a garage, and a storage facility, and has been added to or remodeled several times, most recently in 1954. It is currently unused and empty.

Purpose

DCR, the Cambridge Historical Commission and the Cambridgeport Neighborhood Association are in the process of repurposing the building to contribute to Magazine Beach Park, for a yet-to-be-determined use. The purpose of this report is to establish guidelines for the reuse and rehabilitation of the building and its immediate site, with the aim of preserving the noteworthy features of its historical character, and ensuring that they not be compromised by future renovation.

Pursuant to the establishment of guidelines, the roof will be repaired and security lighting added to protect the building. Further maintenance and upgrades of the building shell are intended to occur in a later phase. Finally, once a new use has been determined, the building will be converted to this new use.

Methodology

The research for the report began with a field assessment of conditions, including measured drawings and photographs of the building. Field work was conducted by Clark & Green, Finch&Rose and Structures North during the fall and winter of 2012-2013. Next, historic sources were extensively consulted with the aim of not only compiling information specific to this building, but also for context and the general history of similar structures, particularly in the greater Boston area, so that informed assumptions could be made where specific information was missing. These sources included archives for the Commonwealth of Massachusetts, the Cambridge Historical Commission Archives, the Massachusetts National Gourd Museum and Archives, America's Historical Newspapers Online, Cambridge Historical Newspapers Online, Cambridge City records, and the *Boston Globe*, among others.

Once the body of historic information was developed, the significant historic features of the building were identified, and treatment recommendations were established and prioritized for phased rehabilitation. Finally, a construction cost estimate for the first phase of construction was created, as a preliminary to designing and bidding the initial work.

Funding

The report and design project is funded by DCR's Partnership Matching Funds Program and is being undertaken in cooperation with the Cambridge Historical Commission and the Cambridgeport Neighborhood Association.

Production

This report has been prepared by Steve McAlister, R.A., of Clark & Green, Inc., Architects; William Finch of Finch&Rose Historic Preservation Consultants; Jeffrey Reese, P.E., of Structures North Consulting Engineers, Inc.; and Nina Cohen, historical researcher.

Summary

The report begins with a general history of the Captain's Island powder magazine, and local and regional conditions prevailing in the succeeding eras up to the present, authored by Nina Cohen. The next section addresses the history of the actual structure itself, as well as the interpretation and significance of various elements, recommendations for treatment based on priorities, and existing conditions assessment, written by William Finch and referencing the structural engineering report prepared by Jeffrey Reese, P.E. Supporting material follows in the form of illustrations, sources, and additional publication articles. The final section of the report deals with feasible reuses and associated costs of stabilization, and was written by Steve McAlister, who also wrote the introductory and summary sections of the report.

Based on consideration of the condition and utility of various elements of the existing building, and the desire to return it to a useful role for the Charles River Reservation, the period of the early 1920's has been recommended as a guide to future architectural and structural rehabilitation. The range of feasible uses of the building fall into four categories: 1) stabilize as a relic and do no further work; 2) convert to DCR operational use; 3) rehabilitate as an interpretive center; or 4) rehabilitate to the needs of third-party permit or lease, for functions such as food and beverage concessions, public assembly (crafts, lectures, music, etc.) or rentals (bicycles, kayaks, etc.).

The priorities for construction are set forth in three groups: 1) immediate and urgent stabilization; 2) restoration of historic fabric; and 3) rehabilitation for reuse. The immediate reconstruction of the roof will ideally leave as much of the historic fabric in place as possible and appropriate, attempt to replicate it, and remove the collar ties installed in a later period. The estimated cost for immediate stabilization only is approximately \$200,000.

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CAPTAIN'S ISLAND POWDER MAGAZINE HISTORY

CAPTAIN'S ISLAND POWDER MAGAZINE HISTORY

Casual passers-by might easily miss the granite-block building on the site known as Magazine Beach. The boarded-up garage and environs reveal no hint of its venerable history. But in its various incarnations—powder magazine, municipal bath house, utility shed—are found connections to early American military, commercial, industrial, and cultural history; the story of gunpowder; and the realization of the burgeoning movement for public parks.¹

...the Island combines so many advantages
over every other place in this vicinity both
as to security and convenience, that I am
decidedly of opinion the Commonwealth
had better purchase it even at this unreasonable
price, than erect a Magazine on any other place...²
– Amasa Davis, Quarter Master General, 1817

Location

The building sits on land formerly surrounded by water at high tide and called Captain's Island. In 1636, the first English colonists granted the island and surrounding marsh to Captain Daniel Patrick, a mercenary hired to drill the militia. "The island's actual military use is unknown, though for several centuries, the high ground would at minimum have been a lookout between Cambridge and Boston and the harbor."³ Before the nineteenth century, the spot marked the transition from a wide, marshy bay to the channel of the Charles River.⁴

In early 1816, Peter Tufts, Jr., keeper of the Public Powder House in Charlestown, applied to the Quarter Master General of the Commonwealth for a new building as "the Powder House in Charlestown is not sufficient to store what powder that is necessary that it should be. I have frequently had to store some powder in private building for want of room...."⁵

Captain's Island in Cambridge, with its remote location and accessibility to the Charles River, proved the ideal place. Powder houses had customarily been built far from settlement in case of explosions. As development spread toward these structures, replacements were built even farther away. Captain's Island's magazine – the latest successor to Boston's powder storage facilities – followed this pattern.

Boston's first magazine for public and private powder had been built on the Common in about 1707.⁶ Two replacements were built, one at the base of Beacon Hill near the West Boston Bridge in 1773, and the other in Watertown.⁷ By 1802, settlement had increased so much that the Commonwealth planned two new magazines "out of Boston."⁸ Only the first was actually constructed, at Pine Island in Roxbury. The second, unnamed site's expense was deemed too great.⁹

Charlestown's powder house, built c. 1704 as a grist mill, was adapted by the Province of Massachusetts as a powder house in 1747, and then used in the Revolutionary War by the American army. Its use as a state facility continued after the war.¹⁰ The Captain's Island magazine, constructed by October 1818, replaced the Charlestown powder house.¹¹ The latter still stands in Powder House Square in what is now Somerville.

Virtually all Massachusetts communities had powder storage facilities. The earliest colonists were required to keep communal supplies of arms for militia members who were unable to provide their own.¹² Following its incorporation, the Commonwealth of Massachusetts – pursuant to the 1792 law establishing a national militia – required every town to keep a specific amount of powder and arms on hand and to submit annual accounts of their inventories. The requisite quantities for each town were determined by a ratio of ammunition to men eligible to serve in the militia. Failure to maintain the necessary inventory resulted in fines.¹³

As for the housing of such supplies, the law specified only that the ammunition should be “deposited in some suitable and convenient place within said town or district.”¹⁴ State magazine reports from 1811 show that communities stored their powder in a variety of places. While many towns built discrete powder houses, at least an equal number kept their powder in the local meeting house as in earlier times. Other towns stored their powder in hearsehouses, stores and in private homes.¹⁵

By some means or other, the Washington Federalist [sic.],
and the newspaper printed in Philadelphia...now and
then steal into our neighborhood, and whenever they come
...they make as much noise among us as a red hot ball
thrown into a powder magazine....If you don't do some-
thing very soon, we shall all be blown up.

– A Plain Republican¹⁶

Powder Rules

Gunpowder's volatility and the need for regulation were well-known. Reports of explosions in magazines and factories appeared regularly in newspapers. Boston's first public magazine was built, in fact, at the urging of “several merchants and others” concerned about such explosions.¹⁷

Laws were enacted – and frequently revised – regulating where and how much powder could be kept, and by whom. Upon the building of the first magazine, the legislature required all powder coming through Boston's port be stored there. Shopkeepers could keep fifty pounds for sale.¹⁸ Further regulations were passed in 1715 on discovery that people were still keeping powder in private houses and warehouses, and moreover, were throwing “squibs, serpents and rockets” and other fireworks in the streets. Penalties of varying amounts were charged: one half went to the informer, the other to the town poor. The parents or masters of children and servants aged twelve and older who were caught throwing squibs and other fireworks were fined. If they did not pay, the offenders themselves would have to sit in stocks or a cage or be imprisoned for a maximum of twenty-four hours. Milder punishment held for children and servants under age twelve: their superiors were only required to pay a fine.¹⁹

The first gunpowder laws for Cambridge passed in 1809, when a powder house was first planned. People could keep up to fifty pounds of powder in buildings other than the powder house, but could store it only in brass, copper or tin containers. Violators of these rules would forfeit the powder and pay a fine equal to the value of the amount confiscated. As in Boston one hundred years earlier, one half of the fine would go to the informer, the other to the town poor.²⁰ It is notable, though, that in 1816, Boston passed a law limiting the amount of gunpowder that anyone in town could keep – including individuals, public servants and military personnel – to just five pounds.²¹

Laws that regulated the licensing of powder sellers and the transport of powder also passed in Boston and later, in Cambridge. As always, powder handlers could not wear nails or buckles on their shoes. Powder-toting carts had to be covered with leather or canvas and soft material underneath to minimize friction. Boston's 1816 law required carts to be marked in capital letters "APPROVED POWDER CARRIAGE," and some sellers touted their powder carts as such. The vehicles could travel only on designated roads when transporting powder.²² In Cambridge, two or more carts traveling together had to maintain a specified distance between them and from any nearby dwellings.²³

Captain's Island Keeper Duties, Powder Storage and Delivery Fees

Peter Tufts, Jr. and his son Charles were the sole keepers of the Cambridge magazine. Peter was also a surveyor. Before moving from Charlestown to Cambridgeport to assume his duties, he surveyed and did "laying out work at" Captain's Island.²⁴ Peter was appointed keeper and Inspector of Gun-Powder on August 28, 1818.²⁵ Charles was appointed keeper on February 15, 1826, ten months after his father died, and retained the position until the magazine was decommissioned.²⁶

The Governor's Council passed many regulations to ensure the safety and quality of the stored gunpowder. At least once, Peter held a sale of the excess state powder at the Cambridge magazine, most likely to store only what was necessary in order to maintain its freshness.²⁷ Charles was explicitly instructed to keep track of the age of the powder and deliver the oldest first, "noting the time when, for what use, and to whom delivered." He was required to record the kind of powder and its manufacturer and to turn it upside down once a month to avoid deterioration. Charles could not substitute one person's powder for another without their written consent. He also could not open or divide casks of powder at the magazines, nor allow any powder, including his own, to be retailed there. Entering the magazines with a lighted candle or wearing shoes with nails or steel buckles were forbidden. The keepers had to be available to perform these duties from sunrise to sunset, 6 days a week.²⁸ (This schedule was presumably modified after the keepers took charge of two magazines, as explained in "Keeper Remuneration.")

The keepers were also required to submit semiannual reports to the Commonwealth detailing the stock of powder and fees collected. Private powder storage and delivery fees had been set in 1702, before the building of the first Boston powder house.²⁹ The fees in 1801 and 1809 were twenty cents per one hundred-pound barrel on receipt; ten cents per one hundred pounds monthly for storage after the initial month; and twenty-five cents for each delivery, with lower fees for smaller casks.³⁰ In 1837, the fees were lowered to encourage the storage of larger amounts of powder. For receiving and delivering one hundred-pound casks, the fee remained the same for the first twenty-four barrels, but decreased for greater numbers. For storage, the monthly fee was eight cents per cask, and six cents for more than one hundred casks.³¹

Initially, Charles could not keep more than twenty-five tons of powder in one magazine unless the other already had that much.³² In 1841 Charles transferred the powder from Pine Island, Roxbury to Captain's Island in preparation for the former magazine's closing.³³ By the Civil War, most of the powder kept in the magazine was stored for private parties, by one account in the range of fifteen to twenty tons. During the war, the state kept up to one hundred tons.³⁴

In addition to submitting semiannual reports, the keepers were required to take oaths and post bonds to ensure their integrity. The Committee on Military Affairs, however, reported in 1821 that the Pine Island keeper

had not submitted his reports, and that moreover, Peter had reported only annually and had not given his oath.³⁵ Soon after Peter's death in 1825, the Adjutant General cited the keepers' carelessness in handling the powder and casks with iron hoops and nails. He asked that the keeper report directly to the Quarter Master General, just as all arsenals for the military and public laboratories did, instead of to the Governor and Council.³⁶ By 1837, Charles addressed his reports to the Adjutant/Quarter Master General.³⁷

Building Expenses

Economics were a perennial concern in Captain's Island's development and operation. Though various accounts have put the magazine's cost at \$6,500, its expenses actually totaled approximately \$11,020.³⁸ This sum included the \$650 that the Commonwealth reluctantly negotiated for the land to the heirs of Francis Dana, much more than the initial offer of \$500, but less than the original price of \$700.³⁹ Some evidence indicates, however, that the expenses were comparable to those for other powder magazines built in the east. In 1818, the United States Congress allotted \$15,000 for a magazine near Philadelphia and \$20,000 for a much larger one in Baton Rouge.⁴⁰ A list of expenses, contractors and suppliers for the magazine is included in the Appendix.

It is of interest that preceding the building of both the Captain's Island Magazine and the first Boston magazine of 1707, the Commonwealth granted private corporations the right to build powder buildings. In the first instance, the Powder House Corporation was organized in 1809 for the purpose of building and operating a facility under state rules in Cambridge. Both apparently never materialized, for reasons unknown.⁴¹

Keeper Remuneration

If the keeper's work could be dangerous, it was also lucrative. Although the Commonwealth had passed a law in 1801 granting it the right to set keepers' wages, the state had in fact allowed keepers to hold onto all the collected fees and make repairs out of that money. Such was the case with Peter.⁴² After the Roxbury magazine keeper died in 1824, Peter proposed that he also manage that magazine under the same arrangement. He was duly appointed its keeper in November, 1824.⁴³ As keeper of the two facilities, Peter might have earned \$1,200 a year in gross fees. After subtracting repairs averaging \$400 per year, his net income could have been as much as \$800.⁴⁴ In that same period, in comparison, farm workers only earned about \$108 annually, including board; non-farm labor about \$233; carpenters about \$435; and workers in manufacturing between \$248 and \$311.⁴⁵

As lucrative as it was, the keeper's position reflected a balancing act between public and private partnerships. The Commonwealth had become concerned about the keeper's method of compensation. It feared that the keeper might retain all the fees and refrain from doing repairs. In such a case, the state by law would be responsible for making up any shortfall in funds needed for repairs, many of which could have worsened from neglect.⁴⁶

After Peter's death, the Adjutant General and the Council – having received many applications proposing how to keep the magazines in good repair – seized the opportunity to set a flat salary.⁴⁷ Charles Tufts was paid a fixed \$700 yearly when he took over the duties at both magazines in 1826.⁴⁸ Repairs were to be authorized separately by the Commonwealth. In 1837, however, Charles' salary was listed as \$500 per an-

num.⁴⁹ After the Roxbury magazine closed in 1841, he received \$400 per year. The arrangement was reversed on January 1, 1843: the only compensation he received was the proceeds from “receiving powder on storage upon his own account, charging such sum therefore as he may think proper.” He still took care of state powder and ammunition, however, and was responsible for repairs to the magazine.⁵⁰ By 1863, Charles was reportedly leasing a portion of the magazine for \$150 per annum. His remuneration remained the same.⁵¹

...the foundation be of stone; the walls of granite, 4 feet thick, 14 feet high, and 9 feet to the spring of the arch, which is to be a semi-circle; the roof to have a quarter-pitch, and to be well slated; and the space between the roof and the arch be filled in with stone – the length of the Magazine 56 feet, the breadth 28 feet – a partition wall in the centre 3 feet thick, on a suitable foundation; the buttresses to project without the wall 4 ½ feet and 5 ½ feet in breadth; two ventilators in each room, with copper strainers; every other course of the wall to be a binder....

–“Notice to Masons”⁵²

Magazine Structure and Repairs

Just who produced the magazine’s specifications is unknown, and no plans have been found as of this writing. A possible clue to its architect, however, can be found in the building of two other military structures for the Commonwealth in the same period. These were a state arsenal near the Cambridge Common and a combination arsenal and laboratory on Pleasant Street in Boston in 1817. These two were almost certainly designed by the architect Asher Benjamin.⁵³ The timing of the magazine’s authorization and construction suggests that Benjamin could have planned it as well.

The Commonwealth passed resolutions to build the powder magazine and two arsenals in 1816: the magazine on February 2nd and the arsenals on December 12th. The specifications for the Cambridge and Boston arsenals were published January 1 and March 20, 1817, respectively. However, Benjamin wasn’t paid for the “plans of Arsenal and Laboratory” until September 9, 1817, more than five months later, and the magazine’s specifications were published just after payment, on September 24. If the powder magazine and arsenals had originally been conceived as separate projects, it is possible that they were ultimately combined into a single endeavor. The payment may have been delayed because plans for the magazine were considered a smaller, though necessary part of the project, and only after they were submitted was payment made.⁵⁴

It is notable that before designing the two structures for which the record is clear, Asher Benjamin had indicated an interest in military matters. In 1811, he donated two volumes entitled *The Art of the militarie* by Henry Hexham, dated 1642, to the Boston Athenaeum. Plans for the magazine would seem to have been within his capabilities and interests.⁵⁵

Absent architectural plans, however, specifications in the “Notice to Masons” for proposals for the building of the magazine, records of materials and contractors, historic photographs and a 1923 drawing recreated from its 1880s original, allow an understanding of the building’s exterior and interior. Paul Revere & Son

supplied the copper for the powder magazine, as they did for many other state structures. The building apparently had glass windows. A payment was made for “setting glass at Powder Magazine Captains Island,” and an 1839 bill noted payment for “mending sash and setting 4 squares glass.”⁵⁶ There were separate entries for “making a carpet” and “painting Carpet for Captains Island Powder Magazine.” A small house was built near the magazine, probably for the keeper. Arsonists burned it down in 1855.⁵⁷ In addition, a well was dug and a stone and wood wharf constructed.⁵⁸

The small number of surviving keepers’ records shows that over the life of the magazine, the keepers made and requested various repairs. In 1837 Charles Tufts reported on the pointing of the magazine and relaying the brick wall in different spots. Two years in a row, 1837 and 1838, he also recommended extending the wharf twenty or twenty-five feet so that boats could dock at Captain’s Island at any time, regardless of the tide. It is unknown if that was ever done.⁵⁹ About five years later, he wrote that the magazine and outbuilding were “in very good repair, but the wharf attached requires new capping and the road leading to the magazine some repairs.”⁶⁰ No keeper records have been found beyond 1843. It is possible that it became unnecessary for Charles to submit them to the state after his salary was eliminated that year.

Several extant accounts document the magazine’s deterioration. The state’s reported in its 1863 Resolve to close the magazine that

....The wall surrounding the magazine is much decayed....
The copper covering of one of the doors has been stripped
off. One of the lightning rods has fallen and large trees
have grown up and now overhang the building...⁶¹

In that year also the Master of Ordnance reported boys climbing up the magazine walls, which were much too accessible, and throwing rocks at the roof.⁶² In 1923, a newspaper feature described the roof’s collapse forty years earlier. A group of small boys broke down the door and – at first awed and then galvanized by opportunity – extracted the copper nails securing the arched roof, floor and woodwork to sell for scrap. The feature’s writer, thirteen years old in 1880, had been one of the marauders.⁶³

Small fires reported in 1880 and 1883 did little damage to the magazine.⁶⁴ An 1890 newspaper reported that the walls were still standing in good condition, and the magazine

...for the last dozen years has gradually become defaced by
boys, but this year it has been nearly demolished...” and
the brick wall had “been torn down and the bricks used for
building....⁶⁵

The Civil War Era

For one or possibly two brief periods during the Civil War, the state moved a supply of gunpowder from the magazine to the Cambridge Arsenal on Garden Street, where it was guarded by Harvard cadets. The magazine itself was guarded round-the-clock by the Independent Corps of Cadets.⁶² A guard duty report from May 24, 1861 noted that the Governor and Quarter Master General visited Captain’s Island to examine the magazine and cadet quarters.⁶⁶

Around this time, development was reaching towards the river. In 1863, Cambridgeport and Longwood area residents submitted three separate petitions to the Commonwealth requesting the magazine's closure, citing the danger to nearby homes. A few months later, the Commonwealth determined the fate of the magazine in a single resolve: it prohibited public powder from being kept at the magazine; authorized necessary repairs to the structure and surrounding wall; resolved to ascertain the building and land's value for sale; and find a site for a new magazine.⁶⁸ Though it is uncertain if the repairs were made, a new magazine was never built. Shortly after, the City Council referred a powder dealer's application to sell and store powder in Cambridge to the Cambridge Fire Department. No records have been found of the outcome.⁶⁹ The state, however, continued to keep ammunition at the magazine through the end of the decade, and passed a resolve to sell the structure in 1871.⁷⁰ They sold it to a private individual in 1882.⁷¹

Conversion to Bath House

Captain's Island had been a swimming spot for some time before becoming a municipal beach (a newspaper report noted that a bather had perished in nearby waters in 1851).⁷² Later – just before the beach opened – a “small floating bath” for swimming was set in the river. Fire destroyed it in April of 1899.⁶⁹ Captain's Island was also, for better or worse, a public gathering place. The 1863 Resolve to remove the magazine, for example, cited “convivial boating parties” disembarking on the Island, and an 1865 newspaper article would have recommended it as a walking destination but for the presence of rowdies.⁷⁴

Though the City of Cambridge considered buying Captain's Island as early as 1863, it was not until 1889 that the city was ready to act. A hearing had been held that year to consider the petition of a local resident, who advocated for “park and play grounds for the young,” citing the new water park on the Boston side of the Charles as an example.⁷⁵ Cambridge took the land by eminent domain in January 1894 for a public park – part of the taking of the entire riverfront from Craigie Bridge to Gerry's Landing.⁷⁶ The City then engaged the Olmsted Brothers to draw up plans for landscaping and a new bath house.⁷⁷

Guided by the Olmsted plan, the City first filled in the marsh surrounding the island and graded the beach.⁷⁸ They also removed the old granite wharf and cut the landing down to the grade of the beach.⁷⁹ However, the City deemed the Olmsteds' \$30,000 vision for the new bath house too expensive. Instead, in 1899 it authorized the firm to design a plan converting the magazine into a bath house for men and boys at a much lower cost of \$1,500.⁸⁰ The City removed parts of the two upper courses of masonry, put windows in, took out the partition, enlarged the entrances, installed a shingle hip roof and hard pine floors, and built one hundred thirty-six lockers, also of pine.⁸¹ Two iron voting booths accommodated women and girls.⁸² Other beach amenities included arc lights in the river for light, an iron diving board, and a bath house telephone.⁸³ Electric streetcars on Pearl Street carried bathers to the beach.⁸⁴ In 1900 the City installed a drinking fountain and a retaining wall and steps in front of the building.⁸⁵ In 1901, two “shower baths” were set up at the magazine.⁸⁶

The City spent \$3000 to remodel the “Stone House” in 1918. Renovations, planned by Charles R. Greco and performed by William F. Condon, consisted of “new toilets, shower baths and lockers...”⁸⁷ Additional changing rooms were also constructed nearby. The City conveyed Magazine Beach and the rest of the Charles River park system to the Metropolitan District Commission in 1921.⁸⁸ The MDC permanently closed the Charles River to swimming at the beginning of the 1949 season due to pollution.⁸⁹ By then, landfill and a dam had turned the Charles River into a “virtual fresh water lake.”⁹⁰ In 1954, the Commission renovated the

stone bath house into a garage and office.⁹¹ Most recently, the bath house has served as storage space.

¹ Wellons, Marilyn and Cohen, Nina. "A Short History of Captain's Island and the Powder Magazine: Historical Background and Context." May 4, 2012. (hereafter called "A Short History of Captain's Island").

² Letter from Amasa Davis to Governor, June 24, 1817. *Letter Book, Quarter Master General's Department. 1812-1826*, vol. 1, p. 90. National Guard Museum & Archives, Worcester, MA (hereafter cited as National Guard M&A).

³ Wellons, Marilyn. "A Short History of Captain's Island."

⁴ Ibid.

⁵ Letter from Peter Tufts, Jr. to Amasa Davis, Jan. 16, 1816. *Passed Acts, Acts of 1816*, chap. 134, SC1/series 229. Massachusetts Archives. (hereafter cited as MA Archives).

⁶ "An Act for Erecting of a Powder-House within the Town of Boston." *Passed Acts, Acts of 1706-1707*, vol. 8, vol. 3 of Appendix, chap. 4, p. 588, July 9, 170(7?)(Boston: Wright & Potter, 1895). <http://archive.org> (hereafter cited as MA Archives online).

⁷ "An Act for Erecting two Publick Magazines for the safe keeping of Powder, the one in the Town of Boston, and the other in the Town of Watertown." *Passed Acts, Acts of 1771*, chap. 9, July 5, 1771, p. 167, 182-183 (Boston: Wright & Potter, 1886). <http://archive.org>. The location of the Watertown powder house was left to the town's discretion and is unknown. Inhabitants of Boston submitted a petition in March, 1771 to move the current powder house out of town because of potential explosions; "Resolve Appointing a Committee to Sell Materials of the Old Powder House." *Passed Resolves, Resolves of 1773-74*, vol. 18, vol. 13 of Appendix, chap. 1, p. 709, May 31, 1773 (Boston: Wright & Potter, 1912), MA Archives online. "Boston, June 24, 1773," '...Laft Week the Powder from the Old PowderHoufe was removed to the new. The old one is to be taken down...' (sic.). *The Massachusetts Gazette: AND THE Boston Weekly News-Letter*. America's Historical Newspapers, <http://iw.newsbank.com>, (hereafter cited as AHN online).

⁸ Petition of Amasa Davis to the House and Senate, Jan. 17, 1816. *Passed Acts, Acts of 1816*, chap. 134. SC1/series 229. MA Archives.

⁹ Ibid.

¹⁰ *Nathan Tufts Park, Cultural Landscape Report and Master Plan*, Somerville Historic Preservation Commission, Feb. 2000, Somerville History Room, Somerville Public Library.

¹¹ Amasa Davis to Governor and Council, *Letter Book Quarter Master General's Dep't 1812-1826*, p. 107, October 9, 1818. Reports that magazine and surrounding wall have been completed; Amasa Davis to Governor and Council, *Letter Book QMG's Dep't. 1812-1826*, p. 105, no date, but entered in book in between letters dated Aug. 17 and 27, 1818. "...a stone Powder Magazine has been built on Captains Island in Cambridge, a brick wall enclosing the magazine will be completed in about twenty days...."; "Report of Comm. on Communication of Adj. Gen. respecting Keepers of Powder Mag." Jan. 18, 1826, vol. 42, p. 90. GC3 Series 327, 1823-1830. Public powder was also kept - apparently illegally, without fees being collected - in a magazine on Noddles Island, then part of East Boston, and possibly the old powder house in Charlestown; Aa. Hill, "Report Relative to Powder Magazines," July 5, 1825, vol. 42, p. 47. GC3 Series 327, 1823-1830. A council order passed recommended discontinuing the Noddle's Island magazine for storage of public powder as of March 1, 1823.

¹² *The Laws and Liberties of Massachusetts*. San Marino, CA: The Huntington Library, 1998, p. 42 (Reprint of 1648 edition), as quoted in *The Newburyport Powder House, HISTORIC STRUCTURE REPORT*, Finch&Rose, Beverly, MA, March 30, 2010.

¹³ "An Act for regulating, governing, and training the Militia of this Commonwealth." *Passed Acts, Acts of 1809-1812*, vol. 5, chap. 107, March 6, 1810 (Adams, Rhoades & Co., 1812). MA Archives online.

¹⁴ Ibid.

¹⁵ *Town Magazine Returns*, vol. 1 & 2 1794-1812. National Guard M&A.

¹⁶ A Good Republican, "To THOMAS JEFFERSON, Esq.," *Hampshire Gazette*, Northampton, MA, June 9, 1802, p. 2. AHN online.

¹⁷ '...Petition of several Merchants and others in the Town of Boston...' to William Stoughton Esq. Lt. Governour, March 14, 1701. (Boston: Wright & Potter Printing Co., 1892), vol. VII, vol. II of *Appendix Resolves, Etc. 1692-1702*, p. 669. MA Archives online.

¹⁸ “An Act for Erecting of a Powder-House within the Town of Boston.” *Passed Acts, Acts of 1706-1707*, vol. 8, vol. 3 of Appendix, chap. 4, p. 588, July 9, 170(7?)(Boston: Wright & Potter, 1895). MA Archives online.

¹⁹ “An Act in Addition to an Act for Erecting of a Powder-House in Boston.” *Passed Acts, Acts of 1715-16*, vol. 2, chap. 12, p. 23 (Boston: Wright & Potter, 1874). MA Archives online.

²⁰ “An Act to provide for the storing and safekeeping of Gunpowder in the town of Cambridge, and to prevent damage from the same.” *Passed Acts, Acts of 1809*, vol. 5, chap. 35, June 20, 1809 (Boston: Adams, Rhoades & Co., 1812). MA Archives online.

²¹ “An Act regulating the storage, safe-keeping and transportation of Gunpowder in the town of Boston.” *Passed Acts, Acts of 1816*, June 18, 1816, vol. 7, chap. 26, p. 218 (Boston: Russell, Cutter & Co., 1818). MA Archives.

²² Ibid.

²³ “An Act to regulate the transportation of Gunpowder within and through the towns of Cambridge and Medford, in the County of Middlesex.” *Passed Acts, Acts of May 1828*, vol. 10, chap. 39, p. 642, Feb. 4, 1828 (Boston: Dutton and Wentworth, 1828).

²⁴ 158. “For Cash paid Peter Tufts Jr. surveying and laying out work Captains Island. \$20.27.” Dec. 6, 1817. *Quarter Master General's Cash Book 1816-1820*, p. 35. National Guard M&A. Peter was also a justice of the peace. His name appears on two of the deeds for acquiring land and rights of way at Captain's Island.

²⁵ “Peter Tufts Jr. Esq. Keeper of Magazine in Cambridge and Inspector of Powder,” Aug. 28, 1818, vol.38, p. 332. GC3 Series 327, 1816-1823. MA Archives.

²⁶ “Charles Tufts, Keeper of Powder Magazine.” Feb. 15, 1826. GC3 Series 327, vol. 42, p. 132. MA Archives. “The Late Charles Tufts.” *Cambridge Press*, vol. 23, no. 24, 15 Sept. 1888. <http://cambridge.dlconsulting.com> (hereafter Historic Cambridge Newspapers online). Charles was secretary of the Mason's Amicable Lodge in Cambridge for almost fifty years; his portrait now hangs on a wall at the Masonic Lodge in Porter Square. Peter Tufts, Jr. was a “zealous” member.

²⁷ “Lady Johnson Gunpowder.” *Columbian Centinel*, published as *American Federalist Columbian Centinel*, Boston, MA, June 18, 1823, issue 4089, p. 3. AHN online.

²⁸ Comm. of MA. “Instructions to Charles Tufts of Cambridge in the County of Middlesex, Keeper of the Public Powder Magazines.” Feb. 25, 1826. *Cambridge Arsenal, Captain's Island and Pine Island, 1786-1846, Letters & Papers: Powder Magazines at Captain's Island, Cambridge and Pine Island, Roxbury*, Records of Charles Tufts, Keeper 1837-1843 (hereafter “Records of Charles Tufts”). National Guard M&A.

²⁹ “Order for Encouraging the Building of a Powder-House in Boston, and for Establishing the Fees to be Received for the Storage of Powder There, Etc.” *Passed Resolves, Resolves, Etc., 1692-1702*, Chap. 60, p. 358, Nov. 17, 1702. (Boston: Wright & Potter Printing Co., 1892). MA Archives online.

³⁰ “An Act to provide for the storing and safe keeping of Gunpowder in the town of Cambridge, and to prevent damage from same.” *Passed Acts, Acts of 1809*, June 20, 1809, chap. 35, p. 44. MA Archives.

³¹ “Letter from Adjutant General Dearborn to Edward Everett.” May 20, 1837. Records of Charles Tufts, National Guard M&A.

³² “Instructions to Charles Tufts of Cambridge in the County of Middlesex, Keeper of the Public Powder Magazines.” Feb. 25, 1826. Records of Charles Tufts, National Guard M&A.

³³ “Chas. Tufts to H.A.S. Dearborn.” July 1, 1841. Records of Charles Tufts, National Guard M&A.

³⁴ *Passed Resolves, Resolves of 1863*, chap. 54, p. 576. Draft of the Final Bill. SC1/series 228. Committee of Military Affairs Resolve detailing situation at Captain's Island powder magazine, March 26, 1863. MA Archives.

³⁵ “Report on Return of Peter Tufts, Keeper of Powder Magazine in Cambridge.” Comm. on military affairs to the Governor's Council, April 28, 1821, GC3 Series 327, vol. 40, p. 278. MA Archives.

³⁶ “W.H. Sumner to the Governor.” June 10, 1825. *Letter Book, Q.M.G.'s Dep't., 1812-1826*, vol. 1, pp. 227-230. National Guard M&A; Duane, William, *A Military Dictionary*. (William Duane, Philadelphia, 1810). www.openlibrary.org. A laboratory was a facility for preparing “all sorts of fire-works...both for actual service and for pleasure...”

³⁷ Charles Tufts to “H.A.S. Dearborn, Adj. & Q. M. General of the Comth. of Mass.” Jan. 2, 1837. Records of Charles Tufts, National Guard M&A.

³⁸ *Quarter Master General's Cash Book 1816-1820*. Sept. 1, 1817– June 12, 1819, pp. 31-70. National Guard M&A.

³⁹ Letter from Amasa Davis to Governor, June 24, 1817. *Letter Book (outgoing). Quarter Master General's Department. 1812-1826*, vol 1, p. 90. National Guard M&A.

⁴⁰ "Congress of the U.S." *Boston Recorder*, Boston, MA. Jan. 16, 1819, vol. 4, issue 3, p. 11. AHN.

⁴¹ "An Act to provide for the storing and safekeeping of Gunpowder in the town of Cambridge, and to prevent damage from the same." *Passed Acts, Acts of 1809*, vol. 5, chap. 35, June 20. 1809 (Boston: Adams, Rhoades & Co., 1812). MA Archives online. "Order for Encouraging the Building of a Powder-House in Boston, and for Establishing the Fees to be Received for the Storage of Powder There, Etc." *Passed Resolves, Resolves, Etc., 1692-1702* (Boston: Wright & Potter Printing Co., 1892). Chap. 60, p. 358, Nov. 17, 1702. MA Archives online. Whether it had to do with economics, liability or other reasons would require further research.

⁴² "Report on Return of Peter Tufts, Keeper of Powder Magazine in Cambridge." Comm. on military affairs to the Governor's Council, April 28, 1821, GC3 Series 327, vol. 40, p. 278. MA Archives.

⁴³ "Report in favor of appointing Peters Keeper of the Powder Magazine at Pine Island," Nov. 13, 1824, GC3 Series 327 vol. 41, p. 394. MA Archives.

⁴⁴ Ibid. "Report on Return of Peter Tufts, Keeper of Powder Magazine in Cambridge." April 28, 1821, vol. 40, p. 278; "Report respecting powder Magazine," June 12, 1821, vol. 40, p. 313; "Report relative to the public Powder Magazines," Feb. 12, 1823, vol. 41, p. 160. GC3 Series 327.

⁴⁵ Lebergott, Stanley, "Wage Trends, 1800-1900," in *Trends in the American Economy in the Nineteenth Century*, The Conference on Research in Income and Wealth. (UMI/Princeton University Press, 1960). National Bureau of Economic Research. www.nber.org/chapter/C2486

Committee report (?) on Powder Magazine, July 3, 1827, vol. 42, p. 402. GC3 Series 327. After Peter Tufts' death, the Commonwealth bought "half a building at Captains Island" and "certain articles at the Powder Magazine at Cambridge" for seventy-two dollars from his widow Anna; "Will of Peter Tufts Jr.," Feb. 2, 1825, "Inventory," Oct. 17, 1825, Probate #23001, MA Archives. Peter Tufts file, CHC Archives. In his will, Peter had left "half of a Building – the whole measuring 36 by 15 finished inside and out with a shed" appraised at thirty dollars, to Anna. Also left to Anna "...to keep possession and take the fees of the Powder Magazines at Cambridge and Roxbury until orders from the Governor and Council to give up the keys and then to take a receipt of them, or their agent for what powder is delivered into their care,..." What this meant would require further research.

⁴⁶ "Report on Return of Peter Tufts, Keeper of Powder Magazine in Cambridge." Comm. on military affairs to the Governor's Council, April 28, 1821, GC3 Series 327, vol 40, p. 278. MA Archives.

⁴⁷ "W.H. Sumner to the Governor." June 10, 1825. *Letter Book, Q.M.G.'s Dep't., 1812-1826*, vol. 1, p 227. National Guard M&A.

⁴⁸ "\$700 Compensation Allowed Keeper of Powder Magazine," Jan. 27, 1826, GC3 Series 327 vol. 42, p. 102. MA Archives.

⁴⁹ "Letter from Adj't. Gen. Dearborn to Edward Everett." May 20, 1837. Records of Charles Tufts, National Guard M&A.

⁵⁰ To Charles Tufts from Adj't/Q.M.Gen'l, Jan. 16, 1843. *Letter Book Quarter Master General's Dept., 1826-1845*, vol 2, p. 262. "Charles Tufts a/c as Keeper of Magazine to Jan. 1, 1843," March 29, 1843. Records of Charles Tufts, National Guard M&A.

⁵¹ *Passed Resolves, Resolves of 1863*, chap. 54, p. 576. Draft of the Final Bill. SC1/series 228. Committee of Military Affairs. March 26, 1863. MA Archives.

⁵² "NOTICE TO MASONS," Sept. 24, Oct. 1 and 8, 1817. *Columbian Centinel*, issue 3492, p. 2. AHN

⁵³ *Quarter Master General's Cash Book 1816-1820*. On Sept. 9, 1817, Asher Benjamin was paid for "drawing plans of Arsenal & Laboratory...10.00." It is almost certain that these were the buildings considered in a resolve that passed on Dec. 12, 1816 for building a combination laboratory and distributing arsenal on Pleasant Street in Boston and an arsenal near the Cambridge Common on state-owned land. No other arsenals were contemplated in the legislature from 1812 to 1819.

⁵⁴ "Resolve relative to erection of buildings, in which to deposit the public military stores. December 12th, 1816." *Passed Resolves. Resolves of 1816*, chap. 149; Governor's Message, Jan. 21, 1818, chap. 73; "To Carpenters and Masons." *Columbian Centinel*, issue 3416, p. 3, Jan. 1, 1817; "To Carpenters and Masons," *Independent Chronicle*, vol. 49, issue 3748, p. 4, March 20, 1817; *Boston Daily Advertiser*, vol. 17, issue 52, p. 2. Legislative proceedings reported on June 2, 1817 that both buildings had been contracted for and were in "a suitable state of progression." Plans have not been found for either arsenal, both of which no longer stand. Building specifications were published for both, as cited herein.

⁵⁵ Email communication on April 19, 2013 with Dr. Jack Quinan, SUNY Distinguished Service Professor, and Dep't. of Visual Studies, University of Buffalo; Telephone conversation on April 19, 2013 with Dr. Earl G. Shettleworth, Jr., Maine State Historian; Telephone conversation on May 10, 2013 with Dr. Kenneth Hafertepe, Chair and Director of Graduate Studies, Dep't. of Museum Studies, Baylor University. As of this writing, these two arsenals are the only known military structures that Benjamin designed.

⁵⁶ *Quarter Master General's Cash Book 1816-1820*. Sept. 1, 1817 – June 12, 1819, pp. 31-70. National Guard Museum & Archives.; Records of Charles Tufts, National Guard M&A.

⁵⁷ *Cambridge Chronicle*, vol. 10, no. 19, 12 May 1855. Historic Cambridge Newspapers online.

⁵⁸ *Quarter Master General's Cash Book 1816-1820*. Sept. 1, 1817 – June 12, 1819, pp. 31-70. National Guard M&A.

⁵⁹ Charles Tufts to H.A.S. Dearborn, Jan. 2, 1837 and Jan. 2, 1838. Records of Charles Tufts, NGM&A. The Adj't/Quarter Master General asked the state for compensation for supervising of building a wharf at Captains Island in 1853. *Letter Book QMG's Dep't., 1845-1861*, vol. 3, April 25, 1853, p. 155. NGM&A.

⁶⁰ Charles Tufts to H.A.S. Dearborn, July 1, 1842(?). Records of Charles Tufts, National Guard M&A. It is unlikely that the wharf was ever extended due to expense, since Tufts reported several times that the wharf needed capping; moreover, in 1846, the Commonwealth paid the City of Cambridge to take over the care – and title – to Magazine Street.

⁶¹ *Passed Resolves, Resolves of 1863*, chap. 54, p. 576. Draft of the Final Bill. SC1/series 228. Committee of Military Affairs Resolve, March 26, 1863. MA Archives.

⁶² "Communication from Acting Master of Ordnance relative to repairs of Magazine on Captains Island," July 1, 1863, GC3 Series 327, vol. 76, p. 178. MA Archives.

⁶³ Thomas W. Rivers, "Magazine Beach – 50 Years Ago and Today (?), *Boston Sunday Post*, May 20, 1923. Cambridge Historical Commission Archives, Magazine Beach file. (hereafter CHC Archives) A transcription of the article is included in the Appendix.

⁶⁴ *Cambridge Chronicle*. 18 Dec. 1880, vol. 36, no. 50; 1 Sept. 1883, vol. 38, no. 35. Historic Cambridge Newspapers online.

⁶⁵ "Captain's Island: An Historic Spot Undergoing Great Changes." *Cambridge Tribune*, 4 October 1890, vol. 13, no. 30, p. 8. Hist. Camb. News. Online.

⁶⁶ Letter from Commonwealth to President Felton, Harvard University, May 1, 1861. Harvard University Archives, Board of Overseers Misc. Series 1854-1874. UA II 10.6.4, Box 1, vol. 1, pp. 307-308; Letter from Henry Lee Jr. to President Felton, Harvard University, May 31, 1861. College Papers, 2nd Series, vol. 28, UAI 5.125, Box 25, p. 158; Letter from William Schouler to Rev. Thomas Hill, President of Harvard College, July 14, 1863. College Papers, 2nd Series, vol. 30, p. 187. "Military Matters in Boston and Vicinity," May 13, 1861. *Boston Daily Advertiser*, vol. 97, issue 14591, p. 4. AHN.

⁶⁷ "Report of a Guard, Mounted at Captains Island, Cambridge port," May 24, 1861. Howard Gotlieb Archival Research Center, Boston University.

⁶⁸ "Resolve Concerning the Magazine on Captain's Island," April 8, 1863. *Passed Resolves, Resolves of 1863*, chap. 54. MA Archives.

⁶⁹ Petition of Edmund Train for a license to keep and sell gunpowder, June 22, 1864, p. 233 and July 6, 1864, p. 240. *Cambridge Council Records*, vol. L 1863-65. Cambridge City Clerk's Office. The Cambridge Fire Department does not have records from that time.

⁷⁰ *Annual Report of the Adjutant-General of the Commonwealth of Massachusetts, for the year ending Dec. 31, 1868*, p. 59, and for the year ending Dec. 31, 1869, pp. 28, 29. (Boston: Wright & Potter, State Printers, 1869, 1870); "Resolve to Authorize the Sale of Captain's Island," Approved May 9, 1871. *Passed Resolves, Resolves of 1871*, chap. 48, p. 780. MA Archives.

⁷¹ "Deed from Commonwealth of MA to Charles E. Raymond of Cambridge," Jan. 30, 1882, recorded Dec. 18, 1882. Middlesex County Registry of Deeds, book 1618, page 490.

⁷² "Drowned," 12 July 1851. *Cambridge Chronicle*, vol. 6, no. 28. Historic Cambridge Newspapers online.

⁷³ "Old Bath House Destroyed," 29 April 1899. *Cambridge Tribune*, vol. 22, no. 9. Historic Cambridge Newspapers online.

⁷⁴ *Passed Resolves, Resolves of 1863*, chap. 54, p. 576. Draft of the Final Bill. SC1/series 228. Committee of Military Affairs Resolve. MA Archives; "Pleasant Walks," 5 August 1865. *Cambridge Chronicle*. Historic Cambridge Newspapers.

⁷⁵ "Re: Captain's Island," March 11, 1863. *Cambridge City Clerk Records*, vol. K 1860-1863, p. 565; Re: Captain's Island,"

“...inexpedient to take any further action at the present time in relation to the purchase of...” April 8(?), 1863. *Cambridge City Clerk Records*, vol. K, p. 582; “City Government. Board of Aldermen.” *Cambridge Chronicle*, vol. 44, no. 2250, 6 April 1889.

⁷⁶ Maycock, Susan E. and Sullivan, Charles M. *Old Cambridge*. Cambridge: MIT Press, forthcoming, 2003, quoted in Haglund, Karl, “The Emerald Metropolis,” in *Inventing the Charles River* (Cambridge: The MIT Press, 2003).

⁷⁷ “A Municipal Bathing Beach,” *Cambridge Chronicle*, June 3, 1899, Real Estate and Building Section. Historic Cambridge Newspapers online.

⁷⁸ “Real Estate,” *Cambridge Tribune*, vol. 21, no. 21, July 30, 1898. Historic Cambridge Newspapers online.

⁷⁹ “Section D,” p. 24. *Cambridge Annual Parks Dep’t Report*, 1899. CHC Archives; “Bathing Place at Last,” *Cambridge Tribune*, vol. 22, no. 18, July 1, 1899. Historic Cambridge Newspapers online.

⁸⁰ Ibid. “Bathing Beach on Captain’s Island,” *Cambridge Chronicle*, July 15, 1899, p. 3.

⁸¹ *City of Cambridge Annual Report*, 1899, p. 255. CHC Archives.

⁸² “Bathing Beaches,” *Cambridge Annual Parks Dep’t. Report*, 1899, p. 9. CHC Archives.

⁸³ “Improvements at Captain’s Island,” *Cambridge Chronicle*, August 4, 1900, p. 10.

⁸⁴ “Bathing Beach on Captain’s Island,” *Cambridge Chronicle*, July 15, 1899, p. 3.

⁸⁵ “Great Crowds Daily at Captain’s Island Bath,” *Cambridge Chronicle*, July 13, 1900, p. 1; *Cambridge Annual Parks Dep’t. Report*, 1900, p. 19.

⁸⁶ “At Captain’s Island,” *Boston Journal*, published as *Boston Morning Journal*, June 7, 1901, vol. 68, issue 22222, p. 5. AHN.

⁸⁷ *City of Cambridge Annual Parks Dep’t. Report*, 1919. “Section D,” p. 8. The City commissioned larger bath house proposals in 1900, but did not proceed because of the expense. Temporary wooden buildings assembled in 1900 made do as beach attendance skyrocketed. *Cambridge Annual Parks Dep’t. Report*, 1900, p. 19. Those burned down in 1916; voting booths were installed the next year. “Section D,” p. 12. *Cambridge Annual Parks Dep’t. Report*, 1917. A larger, permanent bath house, designed by Charles R. Greco and built by the S.F. Hooper Company at a cost of approximately \$16,000, was completed in September 1918. “Section D,” p. 8. *Cambridge Annual Parks Dep’t. Report*, 1919. CHC Archives.

⁸⁸ “Magazine Beach Under New Management,” *Cambridge Chronicle*, April 23, 1921, p. 1. Historic Cambridge Newspapers online.

⁸⁹ *Boston Globe*, June 14, 1949.

⁹⁰ Wellons. “A Short History of Captain’s Island and the Powder Magazine.”

⁹¹ Laszlo, Paul and Ikegami, Masako, *Powder House Revitalization: An Integrated Approach*. April 2009.

www.magazinebeach.wordpress.com.

Captain's Island Powder Magazine Chronology

1816, January 16

Peter Tufts Jr., Charlestown's powder keeper, requests a new building or addition for powder storage.

1816, February 6

Commonwealth of Massachusetts passes Resolve to build a secure magazine in Charlestown or the town of Cambridge to store state powder and "...powder imported, landed or brought into the town of Boston..."

1817, September 10

Commonwealth purchases "strip of land for making road over marsh to Captain's Island" from Jonas Pierce. On September 12, state purchases adjacent parcel from Samuel Tufts in exchange for Tufts and heirs' right of passage across land.

1817, September 24, October 1, 8

Notice to Masons published for a powder magazine on Captain's Island in Cambridge.

1817, September 25, October 22

The Commonwealth purchases 3 acres 20 rods from the heirs of Francis Dana for "a public magazine of powder."

1817, December 6

Peter Tufts, Jr. paid for "surveying and laying out work Captains Island."

1818, by early October

Powder Magazine and wall built and operating at a cost of approximately \$11,020; replaces Charlestown powder house.

1818, October 9

Commonwealth purchases right of way to make a road from the "great road" (now Massachusetts Avenue) to Captain's Island. This becomes "Magazine Street." The state maintains the road for safe gunpowder transport.

1818-1825

Peter Tufts, Jr. moves to Cambridgeport. Appointed keeper at Captain's Island August 28, 1818.

1826

Charles Tufts, son of Peter Tufts, Jr., appointed keeper following Peter's death.

1837

Repairs to magazine include pointing masonry and relaying brick wall in spots.

1845

Commonwealth pays the town of Cambridge \$300 to assume responsibility for Magazine Street "as far as the top of the hill south of the residence of the late Peter Tufts Esq."

1861, 1863

Captain's Island's gunpowder is briefly moved to the Cambridge Arsenal on Garden Street and guarded by Harvard College cadets. The Independent Corps of Cadets guards the magazine.

1863, April 8

Massachusetts Resolve bans private powder or ammunition storage at Captain's Island as of July 1. State ammunition is stored through 1869. Resolve reports magazine wall decaying, one door stripped of copper covering and a fallen lightning rod.

1871

Commonwealth of Massachusetts resolves to sell Captain's Island.

Early 1880s

Powder magazine's roof collapses due to vandalism.

1882, January 30

Commonwealth of Massachusetts sells Captain's Island to private individual.

C. 1880s

Period of major deterioration and vandalism to the powder magazine; slate roof, brick vault, and surrounding brick wall demolished, perhaps to salvage materials. Top courses of exterior stone walls partially removed.

1889, August

Hearing in Cambridge on proposed new park on land that includes Captain's Island. City declines to proceed.

1894, January

City of Cambridge takes Captain's Island for a public park.

1899, 3 June

Cambridge Chronicle publishes plan and elevation of proposed bathhouse conversion by the Olmsted Brothers.

1899, July

Magazine remodeled and converted to a men's and boy's bathhouse. Magazine Beach opens.

1918

Bathhouse remodeled by Contractor William Condon according to plan of architect Charles R. Greco.

1921

City of Cambridge conveys Magazine Beach to the Commonwealth of Massachusetts' Metropolitan District Commission.

C. 1940

Magazine probably starts to be used primarily for maintenance and storage activities.

1949, June 14

Magazine Beach and all other Charles River public beaches permanently closed and swimming prohibited.

C. 1950

Fire damages roof at west end of magazine.

1954

MDC repairs roof and converts powder magazine/ bathhouse to a garage and maintenance staff office according to plans dated March 20, 1953. Ames Child & Graves, Architects; Linenthal & Becker, Structural Engineers, Boston, MA.

C. 1975

Current granite retaining wall and terrace constructed at west end of magazine to replace the 1900 retaining wall that was specified for removal in the 1954 renovation drawings.

HISTORICAL CONTEXT AND INTERPRETATION OF THE BUILDING

POWDER MAGAZINES AND HOUSES — GENERAL CHARACTERISTICS

The terms powder house and powder magazine were both used historically for buildings constructed to store gunpowder whether in a community or within a military fortification. However, the term “magazine” was more frequently used in the context of a military fortification or large structures built by a regional government. The term “House” was used for smaller structures constructed by a town (mining companies also built powder houses to store powder used in their mining operations). In this report the term “powder magazine” refers to large rectangular structures similar to the Magazine Beach building, and “powder house” refers to the smaller structures built by individual towns (usually round but sometimes rectangular).

The typical construction details of powder magazines varied depending on whether they were located within a fortification for the purpose of storing the powder for the defense of the fort, or were completely separate from a fort and were primarily for storing powder to be used by state or federal militia. Magazines within fortifications were built to withstand bombardment by enemy forces. They typically were partially underground with extremely thick masonry walls and roofs that were then covered with earth that would prevent penetration by a bomb (Fig. 5.1, 5.2, 5.3).

Powder magazines located outside fortifications were usually entirely above the ground with thick masonry walls and a relatively thin masonry vaulted ceiling so that the force of an accidental explosion would be driven upwards through the roof without collapsing the walls. A conventional wood framed roof was usually built over the masonry vaulted ceiling. They were often enclosed by masonry walls as a further security measure (Fig. 4.3).

Town powder houses were usually located some distance from existing houses to minimize damage if they accidentally blew up. They differed in both size and detailing from the larger powder magazines. They were typically round, multi-sided, or square, and ranged in size from about 8’ to 20’ in width. Most were a single story in height, and had thick brick walls (usually 3-5 wythes thick) with brick domes or vaults as ceilings to isolate the powder from a conventional wood roof above the dome (Fig. 5.8, 5.9). A few very small ones were built entirely out of wood.

Both powder magazines and powder houses were constructed to provide security from theft, keep the powder dry, and minimize the risk of fire and sparks. They had limited openings for strong doors (often both an inner and an outer door) and provisions for minimal ventilation configured with a convoluted path to prevent fire and rain from penetrating to the interior. Wood floors were constructed above a shallow crawl space to minimize dampness. In some cases wood sheathing was also installed on the walls and ceiling to further minimize dampness (Fig. 4.2, 5.3), and wood shelving was built to more efficiently store the powder kegs. Some used only wood pegs or copper nails in the construction of flooring and interior woodwork to avoid the possibility of accidental sparks from metal on boots, etc, igniting the powder.

A search for period literature on the storage of powder found only a few sources, all of which were concerned primarily with powder magazines within fortifications. Most of the literature stems from the writings of Vauban, a seventeenth century French military engineer.¹

¹ Duane, William, *A Military Dictionary*. Philadelphia: 1810; Howard, George Selby. *Dictionary of Arts and Sciences*. London, c. 1790

POWDER MAGAZINES – BOSTON AREA PRIOR TO 1818

C. 1707: A powder house was constructed on the Boston Common c. 1707 at a cost of approximately 500 pounds. It is shown on the Bonner map of 1722 and on the Price map of 1743 (Fig. 1.2). As depicted on these maps it is a round structure with a conical roof similar to the current Newburyport powder house (Fig. 5.8). Whether this is an accurate depiction or simply a generic map symbol is not known. A smaller building labeled “watch house” is shown nearby. This location was both a considerable distance from any dwelling houses and close to the shore of the Charles River for the delivery of powder kegs by water. It presumably stored powder for the Boston militia regiments and local merchants selling gunpowder. The fortifications at Castle Island and Fort Hill (the south battery) would have had their own powder magazines.

1747-8: The Provincial government purchases the stone windmill in Charlestown (now Somerville) for 250 pounds and converts it to serve as a powder house for the Commonwealth (Fig. 1.3). In 1746 Governor Shirley had noted the need to build an additional powder house, observing that “the present Powder House is so full that there is no room to turn the Powder, and so keep it from spoiling.” That powder house continued to be used to store powder until the construction of the Cambridge powder magazine in 1818, but still stands at Powderhouse Park in Somerville. On September 1, 1774, General Gage sent troops to remove to the fortifications at Castle Island in Boston the 250 barrels of gunpowder being stored at the Charlestown (now Somerville) powder house in the old stone mill.

1773: A new powder magazine was constructed in 1773 at the base of Beacon Hill near the junction of what is now Pinckney Street and Charles Street (Fig. 1.1). As described in *A History of the Granite Industry in New England*, it “was built of Braintree granite with walls seven feet thick and having a bomb-proof arch. It was surrounded by “palisades” and was estimated to contain, when full, a thousand barrels of powder” (p. 22). This was built to replace the powder house on Beacon Hill due to concerns of residents that it was too close to their property. The Beacon Hill magazine ceased to be used between 1802 and 1804. The construction of another powder magazine to be located in Watertown was proposed by the government at the same time as the Beacon Hill magazine. No details confirming its construction or location were found other than its mention in the rules concerning the keeping and transport of gunpowder through Boston.

1802-3: A new powder magazine was constructed by the Commonwealth on Pine Island in Roxbury (Fig. 1.4). Pine Island was located in the marshland at the head of the South Bay (now completely filled in), an area that was then remote from houses but reachable by water as well as a road that was built from the mainland. The cash books of the Quarter Master General for December 1802 include payments to several persons for the delivery of stone including \$200 to John Newcomb of Quincy, \$381 to a Samuel Sprague for 61,000 “bricks for the arch of the powder magazine” and \$110 to a Nathan Fellows for 15,721 feet of “refuse” (i.e., second grade) boards.² Samuel Sprague was also paid \$400 for “mason’s work” at the magazine. These entries are relevant to the Captain’s Island magazine in that Newcomb also supplied the stone for it, and the citing of “bricks for the arch” provides evidence that using bricks to construct arched vaulted ceilings was the norm. It was used until the 1840s.

2 *Quarter Master General’s Cash Book 1802-1803*, National Guard Museum and Archives

CONTEXT, CONSTRUCTION HISTORY, AND ANALYSIS

PART I – 1818 CONSTRUCTION

The powder magazine as it exists today has undergone major changes from its original construction due to neglect in the late 19th century and its conversion to a bath house in 1899. The changes make determining its original appearance and detailing somewhat conjectural.

The 1817 advertisement for proposals (“Notice to Masons” - Fig. 3.1) to build the magazine provides a basic description of the magazine, but lacks a number of significant details.³ The accounts of bills paid for the construction provides additional details, but even these make no mention of some important details, such as the material to be used for the arched ceiling.⁴ It was most likely built with brick rather than stone, but while there are bills for stone there is no bill for bricks, and bricks are not mentioned in the advertisement. It may be that bricks were included in the term “and every other material for the mason’s work” and were supplied by the contractor without specific mention as part of his overall contract.

The following description and drawing (Fig. 3.3) of the magazine as originally constructed is conjectural based primarily on the following:

- The remaining granite walls
- The 1817 “Notice to Masons” (i.e., advertisement) for proposals to build the magazine
- Accounts of bills paid for the construction recorded in the Massachusetts Militia Quarter Master General’s cash books
- Accounts of bills paid for the construction of the 1802 Pine Island Magazine recorded in the Quarter Master General’s cash books
- 1873 plan of the powder house and its surrounding wall. (Fig 3.2)
- 2 photographs of the magazine taken in the 1890s (one is believed to be 1892)
- 10/4/1890 newspaper article describing Captain’s Island
- 1923 Newspaper article with drawing describing the magazine in the 1880s
- Drawings and photographs of similar Powder Magazines

Initial Work - Stone Pier, Well, and Road

The first part of the construction was done in the fall of 1817 and included building a stone pier projecting into the Charles River (the pier would facilitate the delivery of stone and other materials for the magazine by water), building the road over the marsh to the island, and digging a well. The account records include a payment of \$315 on December 1, 1817 to Jonathan & Bryant Newcomb for building a wharf. This suggests that they constructed the stone portion of the wharf as well as supplying the stone. Other payments in the September through November of 1817 included:

- \$112.50 to a William Riley for digging a trench for the wharf,
- \$36.50 to Riley for “work done at Captain’s Island”,

3 Sept. 24, Oct. 1 and 8, 1817. *Columbian Centinel*

4 *Quarter Master General’s Cash Book 1816-1820*, National Guard Museum and Archives

- \$567.50 to Jonah Tenney for building a road over the marsh,
- \$337 to Tenney for digging a well and “other work at Captain’s Island”,
- \$225 to Samuel S. Wheeler for “work at Captain’s Island”,
- \$205.43 to Joseph Shed for lumber “delivered {to} S S Wheeler for Wharf @ Captain’s Island”

Other payments recorded in December, 1817 and January 1818 included:

- \$27.27 to Peter Tufts “for surveying and laying out work at Captain’s Island.” This payment suggests Tufts may have designed the magazine. However, it is also possible that the architect Asher Benjamin designed it, because he designed two local state arsenals that were built that year.
- \$28.74 to Josiah Mason & Son “for lumber delivered at Powder Magazine Captain’s Island”
- \$77.44 to Samuel S. Wheeler for “lumber for Powder magazine”
- \$293.11 to Worthington & Shed for “lumber del’d {delivered} Samuel S. Wheeler for Powder magazine”
- \$1000.00 to Samuel F. Sawyer “on account of building Powder magazine Captain’s Island Cambridge”

These payments indicate that Samuel F. Sawyer was awarded the basic masonry contract for building the Powder Magazine per the September 24, 1817 “Notice to Masons”, and suggest that the actual work on the magazine building did not start until January of 1818, or perhaps April when payment for the first load of stone for the building was made. Based on adding the \$2,300 that Amasa Davis lists as the balance due to Sawyer on his contract as of July 3, 1818 to the \$1,000 paid to Sawyer “on account” on January 23, 1818, his total basic contract was for \$3,300. Additional payments were made to him for work that was apparently not considered part of the basic contract, such as building the brick wall around the magazine, and building a small house on the island. As the cost of stone and lumber was paid directly to the various suppliers by the state, the cost of these materials was apparently not included in Sawyer’s basic contract. Most of the payments to Samuel S. Wheeler indicate he was doing carpentry work as well as supplying lumber. As Sawyer was issued his final payment under the contract on October 19, 1818, the masonry work on the magazine must have been completed by September of 1818. Letters in the *Quarter Master General’s Letter Book* suggest that the magazine was finished by the third week of August and the wall around it by the first week of October.

Granite Walls

The walls were and still are 4’ thick as stipulated in the advertisement. They are constructed with roughly rectangular granite stones on the exterior set in horizontal courses. The stones and coursing on the interior side are similar but slightly less regular. Although now only 11’ high, the side walls (north and south walls) were originally 14’ high. The end walls (east and west walls) rose to about 21’ at the peak of the gabled slate roof. Whether the granite wall rose a little above the plane of the roof to form a sloped parapet, or whether it rose only to the underside of the roof framing with the slate roof passing over it is not known. The latter is more likely as it is simpler to construct and is therefore shown in the rendering (Fig. 3.3). A single buttress was constructed at the center of the exterior face of both side walls as stipulated in the “Notice to Masons”. The two but-

tresses remain in place today.

The overall dimensions of the magazine stipulated in the “Notice To Masons” was to be 56’ by 28’. For some unknown reason, the actual dimensions as built are 58’ by 26’.

The “Notice to Masons” stipulates a “partition wall in the centre 3 feet thick”. Late 19th century accounts of the magazine verify that the interior wall was built and remnants of it survived until 1899. The wall would have risen to the underside of the brick arch that formed the ceiling of the magazine. Whether the function of the wall was to create separate rooms for the storage of privately-owned powder and state-owned powder, or was intended to confine the loss of powder to half the magazine in the event of an explosion is not known. One newspaper account from 1890 describes the wall as being only 2’ thick and having a door 2’ wide, but as the overall dimensions it gives for the magazine are way off, the dimension given for the interior wall is suspect.⁵ The wall was removed in the 1899 renovation.

The stones have a range of color from neutral grey to pinkish and brownish greys. Their exposed faces on the exterior range from about 17” to 24” high and 12” to 48” wide. The corners are bonded together with alternating courses of 4’ long stones. It is not clear whether the stipulation that “every other course of the wall to be a binder” was carried out. If this meant that the stones of every other course were to extend through the wall to the interior, this was not done as the coursing of the interior side of the walls is more irregular and does not correlate with the exterior. Most likely, it was meant that the binding stones were to extend well into the core of the wall, but not clear through. The nature of the interior core is not known, but most likely uses smaller granite stones rather than stone rubble or brick. The stone was set in lime mortar. Joints between stones that were overly wide were chinked with small pieces of granite that remain in place today.

Based on the account record of April 22, 1818 of \$750 for stone supplied by Jonathan & Bryant Newcomb, the granite came from Quincy.⁶ Jonathan & Bryant Newcomb are documented as quarrying stone in the south common of Quincy during the first quarter of the 19th century (Bryant Newcomb is documented as being in business with Joseph Richards in 1803, and Jonathan Newcomb was paid \$200 for stones delivered to build the Pine Island Powder magazine in 1803). Prior to about 1825, quarrying in Quincy (originally Braintree) was limited to working surface boulders and ledge outcrops in the areas known as the north and south commons. Although Quincy granite is generally thought of as being a fairly uniform grey (i.e., the Bunker Hill Monument), the areas that supplied the early stone included both reddish and brownish stone as well as grey. The stones in King’s Chapel in Boston (c. 1749), the earliest extant building documented to use Quincy granite, exhibit a similar range of color.

Ceiling Arch

There are no records of payments for bricks despite the fact the perimeter wall around the magazine was brick rather than stone, and it is our belief that the arched ceiling was also brick. This is in contrast to the 1803 Pine Island magazine, where Davis’s cash book records a payment of \$381 for 61,000 bricks “for the arch of the powder magazine”. Perhaps for the Captain’s Island maga-

⁵ Article from the October 4, 1890 *Cambridge Tribune* describing Captain’s Island.

⁶ Brayley, Arthur Wellington. *History of the Granite Industry in New England*, 1913, and Pattee, William Samuel. *A History of Braintree and Quincy*. 1879

zine, bricks along with lime mortar were considered to be ordinary materials that were supplied as part of the basic contract along with labor for setting the masonry and therefore were provided and billed by Sawyer within his basic contract. The “Notice to Masons” stipulates that the stone was to be included in the contractor’s proposal to build the magazine, but apparently Sawyer must have stipulated in his proposal that supplying stone was not included in his basic price and would be billed directly by the stone cutter.

As stated above, we believe the interior of the magazine was capped with a brick arch that extended the full length of the magazine from the east end wall to the west end wall. The “Notice to Masons” is very specific about the interior arch (i.e., ceiling). Its spring (i.e., base) was to be 9’ above grade and it was to be “a semi-circle 16 inches thick.” The material for the arch was not specified, and given the lack of payments for brick in the account book one might think it was stone like the walls. However, building it with granite would have required very precise cutting of the stone that would have cost substantially more than cutting the stone for the walls. Most (but not all) other magazines including the Pine Island magazine utilized brick for the arch. The specified thickness of 16” matches the thickness that would be produced by building it with two soldier courses of brick (or four courses of headers turned on edge). We therefore believe the magazine was constructed with a brick arch that was half of a circle in section.

Other possibilities are that the arch was segmental in form (i.e., half of an ellipse) to provide more room between it and the roof rafters, or was formed by a pair of groin vaults or domes springing from the top of the interior wall in the center of the magazine similar to vaults in the 1818 Watertown Arsenal magazine⁷ and the still extant Chelsea Naval Hospital magazine. (Fig. 4.4 - 4.7) The latter two were designed by the architect Alexander Parris as part of a complex of buildings. They were unusually sophisticated and would have required considerable skill to construct. A segmental arch provides less strength than a circular arch as well as taking more skill to construct.

Roof

The “Notice to Masons” stipulates that the magazine is to have a slate roof above the arch with its slope at “quarter pitch”, which means that the height of the ridge above roof plates is one quarter of the roof’s span. The Notice makes no mention of the wood framing that would be required for the slate. We have surmised that it would have been pairs of common rafters rising from timber plates set on the outer edge of stone walls. The rise of the arch in relation to the 14’ wall height would have prevented the use of tie beams at the base of the rafters. The lack of tie beams would make a principal rafter/common purlin roofing system unlikely. Unlike Essex County, common rafter systems occur frequently in 18th and early 19th century Middlesex County construction. The underside of the rafters would have passed within inches of the upper side of the arch and may have been shimmed to the arch for support. A short collar tie may have been placed between each rafter pair just above the top of the arch.

The “Notice to Masons” stipulates that the space between the arch and the slate roof was to be filled in with stone. This probably referred to the space between the lower part of the arch and the top 5’ feet of the brick wall and the lower part of the roof, as there was not much space above the upper third of the arch. The intent may have been to make it more “bombproof” in the event of

⁷ Conversation with Sara E. Wermiel, PhD, specialist in the history of building technology

enemy ships coming up the Charles River.

Carpentry

There is no mention in the “Notice to Masons” of carpentry work including the interior finish of the magazine and framing for the roof and floor, and no advertisements for carpenters for the project were located in the newspaper that published the “Notice to Masons”. The cash book, however, records a number of payments for lumber and work to Samuel S. Wheeler, as well as to other workmen besides Sawyer. The records for the 1803 Pine Island magazine include a payment of \$110 for “15,571 feet” (i.e., board feet) of lumber, which is a considerable amount of lumber. Payments for lumber at Captain’s Island were over \$500 suggesting that a large amount of lumber was used. Wood would have been used for both the framing and sheathing of the slate roof, framing and 2” thick floor boards for a wood floor, possibly framing and sheathing to line the interior walls and ceiling, and doors and interior shelving for the powder kegs.

At the very least there would have been a wood floor to reduce the dampness in the magazine constructed over a shallow crawl space, and perhaps some shelving to store the powder. A number of other surviving magazines have remnants of wood planks lining the masonry walls and in some cases wood ceilings below the masonry arch. This was done to reduce interior dampness. Sometimes wood nailers were set into the masonry to provide a means to fasten the planks to the masonry wall. The nailers usually projected an inch or two from the face of the masonry to provide space for air circulation. There is no evidence in the Captain’s Island magazine of voids in the masonry where nailers might have been set.

The granite magazines at Fort Knox in Penobscot, Maine (built from the 1840s through the 1860s) retain much of their original wood linings and the method by which they were secured to the masonry (Fig. 4.2). In that case stiff metal straps were set into the horizontal joints of the wall and projected out several inches to provide secure fastening for wood studs. If a similar system was used at Captain’s Island, the straps would probably have been removed from the wall without leaving any trace when it was converted to a bathhouse. That the account book includes \$163 for copper and one late 19th century description of the magazine mentions finding quantities of copper nails underscores the likelihood that magazine had wood lining the wall as well as a floor. Copper nails were often used in magazines instead of iron nails to minimize the risk of sparks igniting the powder.

The floor of the magazine may have been finished with a painted floor cloth (i.e., painted canvas, a precursor of linoleum), as there was a payment \$48.40 to Joseph Downs on October 21, 1818 for “mak’g {making} carpet for Powder Magazine on Captains Island”, and \$46.50 to John Cotton on October 29, 1819 for “painting Carpet for Captains Island Powder Magazine”. The carpet was probably intended to be a further safeguard against sparks from shoes accidentally igniting the powder.

Doors and Windows

The “Notice to Masons” makes no mention of doors or windows, but does stipulate “two ventilators in each room, with copper strainers”. The late 19th century descriptions and photographs indicate there were two exterior doors, one being placed in each end wall of the magazine. The

c. 1892 photograph shows the door opening in the east end wall (Fig. 6.3), and another 1890s photograph (Fig. 6.2) shows a door opening in the west end. The opening is framed with single pieces of granite forming the jambs, with another single piece of granite forming the lintel. There are two large iron pintles set into the right hand jamb (the rust stains on the stone indicate they are iron) that would have received the large strap hinges for the wood door. The opening was a little over 6' high and probably about 4' wide. Based on surviving doors in other powder houses, the door would have been at least 2" thick and constructed with two layers of boards, vertical boards on the exterior side, and horizontal on the interior side. Most likely there were two doors at each opening as recommended by William Duane in his 1810 *Military Dictionary* and surviving in some magazines. The outer door was placed close to the exterior and opened outwards. The inner door was placed close to the interior wall and opened inwards. The outer door usually was clad with sheet metal, but in this case it was copper. The doors were probably secured with large wood cased rim locks (commonly called stock locks) on the interior side of the door. Two keys to the original locks survive (one is at the Cambridge Public Library and the other at the Massachusetts State House- see Fig. 3.5).

Just what was meant by ventilators with copper strainers is not known. Presumably the strainers were some kind of louvers or sheets pierced with small holes set in an opening to keep out both rain and firebrands that could set off the powder. In some magazines there were narrow (i.e., perhaps 2" wide by 12" high) slits in the masonry to provide ventilation and a minimal amount of light. There is no visible evidence of any slits or larger opening in the lower 10' of the wall that is visible in the 1892 photograph. Therefore any openings whether for ventilation or windows would have had to go through the brick arch if on the long sides, or have been in the upper 10' of the end gable walls. Duane recommended that a window be placed in the upper part of the gable wall with a stout wood shutter to cover it (probably covered with sheet metal). The shutter would be accessed and opened with a ladder when needed to light the interior. If the shutter was on the exterior and the window sash set in several feet within the masonry opening, a lighted lantern could be placed between the sash and the exterior shutter without the danger of igniting the powder.

The 1923 newspaper drawing shows what appear to be two dormers in the roof above the long wall (Fig. 6.1). If accurate, these could be either windows or the specified ventilators. In either case, the construction of the openings would have been more complicated than openings in the gable end, as the opening would have to be formed with a small brick arch at right angles to the main arch in order to head off the thrust of the main arch. The 1923 newspaper drawing also shows a dark spot in the west end gable, which also could be window.

The account records include a payment of \$10 to a John Green Jr. for "setting glass at Powder Magazine Captains Island" on January 22, 1819. Samuel F. Sawyer was paid \$189.20 for "building small house, and sundry other work on Captains Island for Powder magazine." As this payment was recorded on June 12, 1819, nearly 6 months after the payment was made for glass, it seems likely that the glass was being set in the magazine rather than the small house.

CONTEXT, CONSTRUCTION HISTORY, AND ANALYSIS

PART II – OUTLINE OF POWDER MAGAZINE CHANGES FROM 1899 - 1954

1899-1900 Conversion to Bathhouse, Olmsted Brothers

- Wood shingle roof.
- Hip roof framed with 1 7/8" x 7 3/8" common rafters.
- Gutter attached to projecting ends of roof rafters; probably a wood gutter.
- The remaining original 11' high granite walls were repaired and repointed on both their exterior and interior sides, and parged with cement mortar on their top surfaces (side walls were originally 14' high with higher gable end walls).
- 3' thick granite partition wall in center of the magazine was removed.
- 2' high banks of windows with 8 light sash were set into the top of the granite walls on all sides of the magazine.
- East and west end door openings retained their 1818 width but were increased in height by about 1'.
- 7' high granite walls were added next to the north side of the magazine to enclose an open yard - perhaps for outdoor showers or storing tools and beach equipment. Access was only from the outside via openings in the east and west end walls of the addition.
- Granite retaining wall was built beyond west end to create a level area above the beach. A metal stair led from the terrace to the beach.
- Wooden lockers placed along north and south walls inside the magazine.
- Floor was wood.
- The interior was open to the rafters and roof sheathing, which were stained dark brown. The current tie beams were not present.

Changes in 1918-9 Renovation, Architect Charles R. Greco

(See 1918 construction drawings on Illustration Sheet 10)

- Current slate roof installed to replace wood shingles.
- East and west door openings widened to 7' and height increased to underside of window (about 8' above exterior grade)
- Filled in entry openings in east and west walls of north addition with granite that was removed to cut new openings in north wall of magazine.
- Open yard on north side of Magazine was fully closed in by adding a 3'-6"± high wood framed wall on top of the granite wall and covering the yard with a low sloped shed tin roof. The new wall had 7/8" x 6" novelty siding with 2 banks of 8 light sash that were moved from the north wall of the magazine, and was finished with matched boarding on the interior.
- Closed-in yard (i.e., north addition) housed showers and toilets. Partitions added enclosing shower room at east end, room storing rental bathing suits and towels at west end, and closet. Cement plaster covers stone at shower room, toilets stalls, and sink.
- 2 entry openings cut through north wall of magazine to access the north addition.

- Their width & height match the current openings.
- Window openings in north wall filled in with novelty siding.
- Cement floor in both the magazine building and the 1899 north addition including the 3" high raised section for lockers in the magazine building.
- Roof framing remained exposed and without tie beams.
- Metal stair from west terrace down to beach was removed and replaced by a path sloping down from the north side of the terrace.

Changes c. 1940 for Storage Use Instead of Bathhouse

- Replaced stone step at east entry with concrete ramp.
- 2"x 6" tie beams added at every 2nd or 3rd rafter pair spanning from the south roof plate to the north roof plate (These may have been added at some other time between the 30s and 1954, perhaps to support a ceiling).

C. 1950

- Fire Damage to roof at west end of Magazine - may have damaged windows.

1954 Renovation for Maintenance Staff Office and Garage

(See 1954 construction drawings on Illustration Sheets 11 & 12)

- Widen east entry to 13'8" and increase its height to 9'; replace windows above door with wood siding.
- Fill in west entry with vertical wood siding (now plywood).
- Install oil-fired hot air heating system with furnace in west end room of north addition.
- Install stone chimney for furnace flue.
- Replace all 8 light sash with 2 light sash (some may have been replaced before this).
- Metal grills placed on all window sash.
- Add a pair of 2-light windows at east end of north room (former shower room).
- Add matched board section that is currently above the cement plaster section of the shower room partition.
- Replace siding at north addition with new novelty siding.
- Block off westerly opening between magazine and north addition with cement block.
- Install wire lath & plaster ceiling over utility room at west end of north room.
- At west hip roof pitch, remove slate, replace all sheathing and charred joists, and reinstall and/or replace slate.
- Drawing calls for removal of granite retaining wall west of magazine and regrading terrace area to slope down to beach, but this may not have been done at this time.

C. 1975

- Construction of new terrace at west end with new granite retaining wall - the 1899 granite retaining wall may have remained until 1975, as the 1956 aerial photo shows it still in place despite the note on the 1954 drawing.

Unknowns

- Date of installation of 2 x 6 tie beams at magazine roof framing - they lack brown stain and appear newer than the rafters. Vertical wood hangers between rafters and tie beams along with furring for ceiling appear newer than tie beams, perhaps after 1954.
- When were ceilings first installed? They are not shown on 1918 drawings and the 1954 drawings.
- When was current fiberboard ceiling installed? Perhaps after 1954 as it is not shown on the 1954 plans.
- Were some windows sash changed from 8 lights to 2 light sash prior to 1954? 1954 plans draw all sash with 2 lights, but only indicate new sash in north room, which are noted to “match existing sash.”
- When did the magazine cease to be used as a bathhouse?

PERIOD OF SIGNIFICANCE AND INTERPRETATION

The powder magazine has significance both for its initial construction and use as a magazine for the storage of gunpowder for the Massachusetts Militia from 1818 - 1863, and for its conversion and use as a public bathhouse from 1899 - c. 1940 for Magazine Beach. For the purpose of setting parameters and priorities for the preservation/restoration of building features in conjunction with the rehabilitation of the structure for a new use, the period of the 1920s following the 1918-9 renovation is recommended as the primary period of significance. The major elements of the building envelope from this period remain intact today with relatively minor alterations to accommodate the later use as a storage building. Note that the recommended "Period of Significance" is intended as a guide for rehabilitation, not strict restoration. Some details of the current building that date to 1954 may be retained for practical reasons, and it may be desirable to omit some details of the 1918-9 renovation such as the interior partitions in the north addition and the use of tin plate on its roof.

If one focused on the building during the period from 1899-1918, restoration logic would dictate removing the shed roof and wood framed wall from the north addition to return it to a yard open to the weather enclosed by an 8' granite wall, and replacing the slate roof with a wood shingle roof. While a wood shingle roof would be an attractive alternative, the north addition without a roof would be of little or no functional value in most potential reuses of the magazine. With a roof, it offers important "back room" functional space for public reuses of the space within the original magazine.

Using its period as a powder magazine as the primary period of significance would dictate reconstructing the magazine to its original dimensions with its brick vaulted ceiling, small doors and minimal, if any, windows. While the resulting space would be dramatic and unique to the Boston area, it would put severe constraints on reuse options and increase the costs beyond practical feasibility. It is recommended that the powder magazine period be interpreted through a limited exhibit as a component of the reuse of the building.

CHARACTER DEFINING FEATURES – PRESERVATION & RESTORATION PRIORITIES

Primary Preservation Priorities (i.e., features to be retained and preserved)

- Existing granite walls & buttresses, both at magazine and north addition.
- Existing window openings in granite walls.
- Existing west door opening in magazine.
- Existing exposed rafter tails on the exterior (or reproductions of them).
- Interior form of the roof with exposed rafters and roof sheathing as an interior feature of the magazine.
- Existing roof plate along with reuse or reproduction of existing common rafters and wood sheathing.
- Exterior form of the roof including rafter tails.

Secondary Preservation Priorities (i.e., features that are desirable to retain, but not critical)

- Existing matched boarding on wood frame section of north addition exterior walls; retain or replace with matching new boarding.
- Existing concrete floors.

Critical Preservation Treatments

- Reroof both magazine and north addition including repair/replacement of framing and sheathing.
- Cut and repoint 100% of exterior joints on the magazine; retain all chinking; tool joints to match detailing surviving intact from early 20th century pointing but avoid feathering mortar over surface of stones; mortar formula to be determined, but a higher lime content than the existing mortar or possibly an hydraulic lime mortar would be desirable.
- Cut and repoint 100% of exterior joints on the north addition as above, but reproduce raised rectangular tooling that is present in the existing joints.

Restoration Priorities

- Restore window sash to 8-light configuration of 1918-9 renovation.
- Retain exterior novelty siding at upper wall of north addition or replace to match existing siding.
- Construct period-appropriate exterior wood doors at east and west entries based on 1930s photos (use 1954 drawing for east entry if it is to be left at its current size).
- Consider restoring east entry granite opening to its 1918-9 dimensions including restoration of the windows above the door.
- Consider using vocabulary of matched boarding for new interior partitions.

Recommended Interior Removals

- Existing ceiling tie beams, furring, and remnants of fiberboard ceiling in both magazine and north addition.
- Existing white paint and whitewash on all interior masonry.
- Existing plaster on granite walls in north addition.
- Existing cement block from westerly opening in north wall of magazine.

- Existing interior partitions in north addition including infill of easterly opening and infill in former windows in north wall of magazine.
- Existing plaster ceiling of westerly utility room in north addition.
- Existing heating system.
- Existing electrical system
- Existing exposed plumbing, fixtures and toilet stall.

Recommended Exterior Removals

- Existing slate on magazine roof and tar & gravel roofing on north addition (in conjunction with repair/reframing of roof structure).
- Graffiti from west wall granite.
- Blacktop paving within 2' of perimeter walls - replace with gravel or stone, and possibly French drain.
- Remove granite chimney unless needed for venting new utilities.
- Remove the modern granite blocks that sit on the ground at the base of the north and south walls (2 at each wall). Retain for use elsewhere.

Recommended Exterior Modifications

- Modify cornice of north addition roof to more effectively shed water away from the north wall.
- Modify edge of magazine roof to minimize drainage of roof runoff on rafter tails.

EXISTING CONDITIONS ASSESSMENT

Please note that the following assessment is organized by the various building systems and the two distinct structures that make up the current building. The term “1818 building” refers to the original 1818 56’ x 28’ powder magazine. The term “1899 addition” refers to the structure added to the north side of the magazine in 1899 and further enclosed with a roof in 1918. Each section first describes the origin and evolution of the feature along with its current state. This is followed by an assessment of the condition of the feature set in italic type. A structural assessment by Structures North Consulting Engineers, Inc. is included in the Appendix. The illustration section of this report includes captioned photographs that illustrate most of the primary conditions that are discussed in the following assessment.

Stone Pier, Well, and Road (i.e., Archaeological Features)

Any remnants of the original stone pier, well, and lower road were completely removed during the 1899 renovation of the powder house and construction of the beach. Stones may have been salvaged from the pier and reused in the 1899 construction of the retaining wall below the west end of the powder house and the addition on its north side. The small house that was built on the island in 1819 was reportedly destroyed by fire in the 1850s. Probate documents for Peter Tufts from 1825 refer to a building measuring 36’ x 15’ that may have been the small house.

The extensive regrading shown being done in c. 1900 photographs suggests that any archaeological evidence of these elements has been severely disturbed, except perhaps under the concrete floor of the magazine and next to the foundation. (Fig. 8.2)

Granite Walls - 1818 Building

The original exterior granite walls and buttresses remain in place, but are now only 11’ high. The upper 5’ of the side walls and the gables of the end walls had collapsed or been removed for salvage stone during the 1880s. The 1890s photograph shows that the walls were only intact to the height of about 11’ (8 courses of stone)(Fig. 6.2 & 6.3.) Openings for the windows installed in 1899 have reduced the granite walls to 8’ in a number of locations, and the door openings in the end walls have been increased in both width and height. Based on historic photographs the 1899 renovation retained the original width of the door openings in the east and west ends, but increased their height (Fig. 8.3 & 8.6). The openings were first widened to 7’ as part of the 1919 alterations, as shown on the 1918 construction drawings (Fig. 10.1). A 1932 photograph shows that the east door opening had been widened by that time (Fig. 9.3). During the 1954 alterations the east opening was widened to its current 13’8” width (Fig. 11.1). The west end door opening appears to have reused the original cut granite jamb stones on both the inside and outside. Two additional openings have been cut into the north wall for access to the 1899 north addition. These openings were present in 1954, and were cut into the north wall in 1918 (Fig 10.1).

Comparison of the exterior of the south side with the two 1890s photographs shows that the placement and coursing of the remaining stones is largely original including the corner returns at the end walls. The masonry within about 1’-2’ of the end walls door openings has been rebuilt as part of widening the doors. Stones in the top courses were probably reset in their original positions as part of the 1899 renovation, and the upper part of the buttresses was also rebuilt at that time.

Most of the original exterior face of the north wall was enclosed by the construction of the north addition in 1899 and its alteration in 1918.

The exterior faces of the stone on the south, east, and west remains unpainted and are generally in good condition, except the west end, which has a substantial amount of painted graffiti. The granite walls remain plumb and true with no signs of significant settlement or distress other than the deteriorated mortar joints discussed in the next section, and a vertical crack in the south wall that is discussed in the structural engineer's report.

The exterior face of the north side wall is currently enclosed within the 1899 north addition. Portions of the north wall's face have been plastered over with a cement plaster. The remaining (unplastered) sections have been whitewashed, which is now peeling.

The interior faces of the original walls are now whitewashed and/or painted with a white oil paint. The interior coursing is more irregular than the exterior, and many of the stones appear to be substantially smaller and irregularly shaped. The locations where the original interior partition wall intersected the original exterior walls were similarly patched, after the partition was removed (Fig. 18.2 & 19.3). There are also areas of smaller stones at the top of the walls. These probably indicate c. 1899 rebuilding above the level of the spring of the original arched ceiling at 9'.

The paint on the interior faces of the original stone walls is peeling and/or badly worn on most surfaces. As old oil paint may contain lead, the painted surfaces should be tested for lead.

The top surfaces of the original exterior walls were fully parged with cement mortar in 1899 to cap the wall and provide a level seat for the new (in 1899) roof plate. Where the masonry was cut down to receive banks of windows in 1899, the masonry in the side cuts was rebuilt leaving the stones exposed, and the top of the walls below the windows was parged with cement mortar. Where the door openings have been widened in the end and north walls, the face of the cuts has been made square with cement that was cast in place as evidenced by the pattern of the board formwork in the surface of the cement (Fig. 19.7).

The cement parging at the top of the stone walls and bases of the window openings remains intact and appears to be sound. The cast-in-place cement at the cuts for door and window openings is visually disfiguring but in functionally sound condition.

Granite Walls - Mortar Joints - 1818 Building

The walls do not retain any remnants of the original or pre-1899 mortar on either of their inside or outside faces. The 1890s photographs show that the mortar joints were heavily deteriorated at that time. The bedding mortar is probably the original 1818 lime mortar (except where the stones were reset in 1899).

The visible exterior mortar joints are largely from repointing during the 1899 renovation, although some may be more recent. They appear to be a cement- rather than lime-based mortar, and are currently buff-colored. The original stone chinking generally appears to remain in place, although some additional chinking may have been done in the 1899 renovations. The 1899 repointing tends

to lap over the faces of some stones rather than being confined within the joint, and has been tooled with a concave line in the center of the joints. A single vertical crack extending through the mortar joints to the interior face of the wall at the eastern end of the south wall is noted and discussed in the structural engineer's report.

Most of the mortar joints on the inside face date to the 1899 renovation and retain their original 1899 tooling. There is some minor hairline cracking, an area of crude, more recent repointing, and a crack that may reflect some structural movement that is discussed in the engineer's report (Fig. 18.1). In other respects, the interior mortar joints appear to remain sound and serviceable.

The bedding mortar is probably the original lime mortar (except where the stones have been reset at the tops of the walls and the buttresses). That mortar is quite friable in places, and in a few spots we were able to insert a ruler 12" into the joint (Fig. 14.4). However, except for cracks noted in the engineer's report, there does not appear to have been any substantial movement due to the condition of the interior bedding mortar.

The exterior pointing is now extremely weathered with many of the joints being void of mortar or cracked. The chinking within the joints remains sound, but may require resetting in conjunction with future repointing. Deep erosion into the bedding mortar is present in portions of the south buttress and may require partial rebuilding of that buttress. The generally friable condition of the internal bedding mortar does not appear to be causing any problems and should remain serviceable as long the exterior and interior faces of the walls are soundly repointed. The mortar joints at the interior faces of the walls are covered with paint, but appear to remain sound and serviceable other than the single crack noted in the structural engineer's report. Removal of the paint may reveal that the pointing is aesthetically unattractive and possibly some minor defects hidden by the paint.

Granite Walls - 1899 Addition

The granite walls added to the north of the original 1818 structure in 1899 remain in place, but as originally built, they simply enclosed a yard without a roof. The yard was entered by openings in the short east and west walls rather than from the interior of the magazine. These openings were filled in in 1918, using granite salvaged from the openings that were cut into the north wall of the magazine at that time (Fig. 10.1). The 1899 addition walls do not appear to be toothed into the 1818 structure (i.e., they simply butt up to it). In 1918 the height of the walls was increased by about 4' by adding a wood framed wall on top of the granite and closing the yard in with a low pitched shed roof (Fig. 10.4). According to the 1918 drawings, that roof was covered with tin plate. The added granite walls are 2' thick and are capped with cement mortar parging. Most of the stones match the original 1818 granite in color and surface finish, but are slightly less regular in shape and coursing. The stones may have been salvaged from the interior granite partition that was removed from the original magazine as part of the 1899 renovation work, and/or other stones that can be seen around the building in the 1890s photographs. There are a few pieces of lighter grey granite that were clearly reused from other sources.

The exterior faces of the stones are generally sound and reasonably clean except for bottom courses on the north side, which are stained from algae growth and dampness from water draining off the roof. The granite walls remain plumb and true with no signs of significant

settlement or distress other than the deteriorated mortar joints discussed in the next section, and a vertical crack in the east wall that is discussed in the engineer's report.

The interior side of the stone has been whitewashed and/or painted, and substantial areas are covered with cement plaster over wire lath that was installed in conjunction with the installation of the shower room and toilet stalls in 1918 (Fig. 20.2 & 20.3). The cement plaster seems to be strongly adhered to the stone, and may be difficult to remove. The paint is generally peeling and worn similarly to the paint inside the 1818 building. As old oil paint may contain lead, the painted surfaces should be tested for lead.

Granite Walls - Mortar Joints - 1899 Addition

Both the interior and the exterior walls appear to retain much of the buff-colored cement mortar pointing from the 1899 construction. The joints on the exterior walls are tooled with a wide rectangular shaped raised bead (Fig. 15.3). The tooling is largely eroded on the north facade, but is more intact on the east facade.

The majority of the exterior joints are compromised with extensive hairline cracking and some voids. The exterior warrants 100% cutting and pointing of the joints with duplication of the original tooling. There is a substantial vertical crack on the west side that extends through the full depth of the wall to the interior that is discussed in the engineers's report (Fig. 15.2 & 15.4). The crack coincides with the junction of the 1918 door infill masonry with the 1899 masonry.

Much less care was taken in finishing the joints on the interior side of the walls. Mortar frequently laps heavily over the face of the stone, and is only minimally tooled. The whitewash masks the sloppiness of the pointing. There are areas where the feathered edge of the mortar joints is cracked but does not compromise the integrity of the wall. There are also a few areas of very poorly-done recent pointing.

The interior pointing remains serviceable other than the one structural crack in the west wall. Removal of the paint may reveal that the pointing is aesthetically unattractive and may also reveal some minor defects hidden by the paint.

Roof - 1818 Building

The existing slate on the roof was first installed in 1918 to replace the wood shingles installed in 1899 (Fig. 10.2 & 10.3). It is noted on the 1918 construction drawings as "sea green slate". The existing framing and sheathing for the hipped roof dates to the 1899 renovation, with some replacement of framing and sheathing having been made to the west end in 1954 due to a previous fire (Fig. 11.1). The framing consists of 1/7/8" by 7 3/8 ±" common rafters 16" on center set on 6" x 8" roof plates that are placed on the outer 6" of the granite walls. The rafters appear to be yellow pine and along with the sheathing have been stained dark brown. The rafters ends project about 20" beyond the outer face of the plate to form a simple projecting overhang. Their ends are plumb cut and originally received a gutter that ran around all sides of the building. The gutter was removed in 1918 and is no longer present. The space between the rafters above the roof plate is

closed in with pieces of 1" lumber. 2" x 6" tie beams are placed at the base of every second, and at some locations, third rafter pair (i.e., 32" & 48" o.c.) spanning from the south to north walls. These lack the brown stain that is on the rafters, are thinner than the 1 7/8" width of the rafters, and are not shown on the 1918 drawings. They were probably added sometime after the 1918 renovations, probably in the 1930s or 40s (Fig. 17.7). As there is char on some from the c. 1950 fire, they were installed prior to the fire. They appear to be nailed into the bases of the rafters.

A number of 1"x 6" vertical struts have been added between the rafters and the tie beams to support the ties across the 18' ceiling span. These may have been added as part of the 1954 roof repairs as they are present at the west pitch that was reframed in 1954 (Fig. 17.2). There are also 2"x 3" members spanning the space between some of the tie beams. Both the vertical struts and the 2" x 3" members appear to have been added to help carry the furring for the current fiber board ceiling. The ceiling has been largely removed but the furring for it remains in place. As the fiberboard ceiling is not shown on the 1954 renovation plans, it may have been added a few years later but this is not certain. The 1954 plans do call for the removal of a partition about 16' west of the east end of the building along with a furred ceiling that is shown above the area between the partition and the east wall (Fig. 11.1 & 12.1). That partition and ceiling are not shown on the 1918 plans and were probably a later alteration. The 1918 plans show an 8' high wood screen placed about 4' from the east wall to block the view of the changing area from the east door (Fig. 10.1 & 10.5).

The roof sheathing is 1"x 6" tongue and groove square-edged sheathing boards that are also stained brown. At the west roof pitch and other random areas where the sheathing has been replaced, the sheathing boards are not tongue and groove and have not been stained.

The projecting ends of the rafters on the north pitch were cut back to the outer face of the plate in 1918 when the current low pitched roof was added over the 1899 north addition (Fig. 17.7). The rafters of the north addition roof appear to be nailed into the bases of rafters of the 1818 building.

Roof Framing: *Significant condition issues include char and mold growth on some of the rafters, extensive areas of char and rot on the sheathing, and rot in the exposed ends of many of the rafter tails (Fig. 16.4 & 16.5). The char and most extensive rot is at the west and north portions of the roof, but pockets of rot exist at other locations. The roof plate has some superficial char on the west end side and a few small pockets of rot, but appears to remain generally serviceable. The rot in the ends of the rafter tails is due to the original gutter having been removed in 1918 without providing a drip edge and fascia board to keep the roof drainage from running over the exposed end grain of the rafter tails. When the roof is replaced its edge should be detailed to protect the rafter tails from the runoff. These condition issues along with the structural capacity of the roof framing and treatment recommendations are discussed in the engineer's report. That report notes that according to modern standards the existing roof frame is overstressed about 20% under the loading of its slate roof. The later tie beams and the roof rafters of the 1899 north addition are nailed into bases of the main roof rafters, and the roof sheathing of the 1899 addition probably laps over the sheathing of the 1818 building.*

The slates covering the roof are noted as "sea green" on the 1918 construction drawings, but appear to be a type of Vermont slate now known as "Fading Green" because a percentage of them fade to light brown over time. The slate was installed in 1918 to replace the wood shingles installed in 1899. It is visible in a 1932 photograph of the magazine (Fig. 9.3). The notes on the 1954 repair drawings are unclear as to whether only the west pitch of slate was to be repaired/

replaced at that time, as they refer to the now-missing specifications for details. The slates are uniform in size, being 12" wide by 18" long with a 7 1/2" exposure. They are nailed with copper slate nails. This type is a relatively inexpensive slate that has about a 75-year life span before it starts to become soft and punky. Significant portions of the roof slates are covered or replaced with plywood and/or roll roofing from past expedient repairs. These past repairs are now extremely deteriorated.

Roof Slates: *The slate has substantial condition issues with at least half of the slate on the north pitch being either missing or severely damaged, and substantial pockets of slate being missing or broken on the other pitches. In general, the slate is near the end of its normal service life. If salvaged for rehangng, only about half of the existing sound slate will be reusable and may only have another 20 years or so of remaining service life. At best, only enough slate would be salvaged to cover the south pitch. Given the relatively poor quality of the slate, complete replacement with new roofing is recommended.*

Roof - 1899 Addition

The existing roof was constructed in 1918 as part of improvements made to the bathhouse that year at a cost of \$3,000. The improvements, as shown in the 1918 construction drawings, included showers and toilets. As constructed in 1899 and shown in photographs, the north addition was simply a perimeter wall enclosing an open yard. Its use is not known. The Annual Reports do not document any substantial improvements until 1919. A photograph dated 1932 shows the 1899 addition with a roof on it (Fig. 9.2).

The roof framing consists of 1 7/8"x 8" rafters set on the north roof plate of the 1818 magazine spanning about 14' to a plate at the top of the wood framing that was added at that time to the 1899 granite wall (Fig. 17.6). The projecting rafter tails of the 1818 magazine were cut off flush to the outer face of the roof plate to facilitate the installation of the 1918 roof. The 1918 rafters were tied into the main roof by nailing them into the ends of the 1899 rafters and/or toe nailing into the plate. The roof sheathing is 1"x 6" square edged boards.

Roof Framing: *To the extent that they are visible, the framing and sheathing do not show the extreme deterioration visible in the 1818 building, but mold is visible in a number of areas on the sheathing. Its westerly end is hidden by a plaster ceiling, and this is where the deterioration on the main roof is most extensive. Given the condition of its current tar and gravel covering and its mold growth, it is likely the sheathing will need to be replaced.*

The 1918 construction drawings specify a "tin roof" on the 1918 addition. This was probably small pan flat-seamed tin plate or galvanized steel, and would have been painted. It is not known when it was replaced with a tar and gravel roof. A paint pencil note over the roof on the 1918 construction drawings says "T & G". Perhaps this indicates that the specified tin roof was not installed at all.

The north side edge of the roof is finished with simple boxed cornice and crown molding having a total projection of about 6" beyond the exterior face of the wall below. This is not sufficient to keep the roof runoff from blowing back against the masonry wall below and results in considerable staining at the base of the building (Fig. 15.4). The runoff is considerable as it includes the

north pitch of the main roof plus the addition roof. The problem is exacerbated by the blacktop paving running up to the base of the building causing splash-back on the granite from the runoff hitting it.

T & G Roof: *The current roof finish is tar and gravel that is in poor condition and long past its useful service life, and the related wide copper apron flashings at its junction with the north pitch of the main slate roof are worn and disheveled. Replacement of the roof with an EPDM roof and new copper apron would be appropriate given its low pitch and minimal visibility. Replacement with a flat seam copper roof would be a viable alternative with a longer service life.*

Roof Cornice: *Roof runoff off the north edge of the roof is causing considerable staining at the base of the building. The roof edge should be redesigned with a deeper projection when a new roof is installed, and the blacktop at the base should be replaced with gravel and a french drain. Adding a gutter is an alternative solution, but given the proximity of mature trees, it would be prone to clogging up unless cleaned of organic debris on a very frequent basis.*

Carpentry - 1818 Building

Existing carpentry in the 1818 magazine is limited to the 1899 roof framing discussed above in the roof section, 1954 furring for a fiber board ceiling (the ceiling has been largely removed), and framing for the windows that were added in 1899 and modified in 1954. The mullions of the window frame between the individual sash probably provide some structural support to the roof plate where it spans the window openings.

The furring for the fiberboard ceiling and related vertical board struts appears to remain sound but is constructed in a haphazard fashion. A few pieces of the fiberboard ceiling remain in place but are severely damaged. Whether a new ceiling is constructed or the roof framing is fully exposed in the rehabilitation of the building, the existing furring will not be reusable and will impede the repair of the roof framing. The furring, the remaining fragments of fiberboard ceiling, and related elements should be completely removed as part of the initial stabilization work.

Some components of the window frames exhibit rot and extreme wear, although the mullions appear to remain sound enough to prevent the roof plate from sagging over the span of the window openings. The window sash are extremely deteriorated and in some cases missing. As a practical matter, it should be assumed the entire window frame assembly should be replaced in conjunction with the replacement of the window sash.

Carpentry - 1899 Addition

Carpentry elements in the 1990 addition include the 4' high extension of the addition's exterior granite walls, several interior partitions, infill of the 1899 window openings at the top of the 1818 magazine's north wall with novelty siding done in 1918 when the north addition was built, furring for a fiberboard ceiling installed in 1954 or a few years later, and roof framing that was previously discussed.

The 4' exterior wall extension is framed on the outer edge of the 2' thick granite walls with 2" x 4" studs and plates. Its current exterior finish is horizontal novelty siding installed in 1954 to replace the 7/8" x 6" cypress novelty installed in 1918 (the 1954 drawings specify the replacement). It is capped with a shallow boxed cornice and crown molding along the north side. Its interior finish is painted tongue and groove matched boarding that probably dates to 1918.

The condition of the siding and interior matched boarding of the 4' extension wall is worn but marginally serviceable. The boxed cornice and crown molding along the north side of the addition is sound, but it does not project far enough to prevent roof drainage from running over the base of the stone wall below. The paint on the siding and cornice is peeling badly.

At the east end of the interior there is a plaster partition capped by matched boarding that defines a small room listed as "Foreman's Office" in the 1954 alteration plans. The partition was installed in 1918 to enclose a new shower room, but did not include the matched board cap and the door. The matched board cap was added later, as it intersects a 1918 window sash. The condition of the partition is poor.

At the west end a matched board partition defines a utility room where a 1954 hot air furnace is currently located. The partition dates to the 1918 alterations when it enclosed a room used to store rental bathing suits and towels. The room was accessed through the 8' wide opening in the north wall of the magazine that was made in 1918. The current metal-clad door was added in 1954. Another plaster partition in the northwest corner defines a small toilet stall.

Another partition shown on the 1918 drawings to enclose a small closet was removed prior to 1954.

The westerly opening to the 1818 building has been filled in with matched boarding to frame a door with a window on one side. Both the door and the window are missing. The infill of the window openings in the magazine's north wall is novelty siding that was specified in the 1918 construction drawings.

All the interior partitions are in poor condition. The partition defining the utility room is considerably out of plumb. The wood additions to the partition at the east end are in poor condition and its door is falling apart. The infill at the westerly opening to the 1818 building is missing some of its boarding as well as its door and window. The 1918 novelty siding infilling the easterly former window opening to the 1818 building has been severely altered by the installation of the 1954 heating system. The infill at the westerly window opening is still intact.

Windows and Doors - 1818 Building

The existing door openings in the end walls date to the 1954 alterations when the previous east end opening was widened to 13' 6", and the doors in the west end opening were replaced by a wood infill panel. The current door in the east end is a modern overhead garage door installed some years after 1954. The 1954 infill in the east opening has been recently replaced with plywood. The detailing of the doors installed in the east end in 1918 is clearly visible in the 1930s photographs.

There are two openings in the original north side granite wall that were opened to their current height and width in 1918 for access into the 1899 north addition. The westerly 8' wide opening provided access to the storage room for rental bathing suits and towels, and was filled in with cement block in the 1954 alterations. The easterly 6' wide opening provided access to the toilets and showers, and currently is blocked down with matched boarding to accommodate a door and sidelight that are no longer present.

Banks of 2' high windows were initially installed in 1899 with 8-light hopper sash in all four walls (Fig. 8.6 clearly shows the 8-light sash). Currently there are 2-light sash and frames in the south and west wall window openings that replaced the 8-light sash in 1954 or possibly earlier (the 1954 drawings indicate they may have already been present as 2-light sash - perhaps they were replaced following the c. 1950 fire). All the sash are covered with wire grills that were specified in the 1954 drawings. The windows in the west wall are covered with boards on the exterior. The windows in the east wall were removed and infilled with the current novelty siding when the door opening was enlarged in 1954.

All the former doors are now missing except at the west end entry where a garage door installed sometime after 1954 remains in place. It is marginally serviceable but not in character with the bathhouse period.

All the window sash are no longer serviceable and in poor condition. The openings are significant relative to the bathhouse usage, but the current sash are not significant and should be replaced with 8-light sash matching the ones that were present during the bathhouse period. Whether to use insulating glass and /or add storm windows should be a function of the specific reuse of the building and whether it is to be heated, once that is determined.

Windows and Doors - 1899 Addition

Windows with 8-light sash were initially installed in the addition c. 1918 when the addition was enclosed with a roof. The current 2-light window sash date to 1954 when they installed to replace 1918 8-light sash as noted on the 1954 drawing. The two banks of windows in the north addition wall were removed from the north wall of the magazine and reinstalled in the addition in 1918. The windows in the foreman's room at the east end were not present until 1954 when they were installed to light the office. The door in the partition defining the utility room is a metal-clad door. The door to the "foreman's office" is a board and batten door.

The door to the "foreman's office" is falling apart and missing boards. The metal-clad door to the utility room is dented but marginally serviceable.

The current window sash are all no longer serviceable and in poor condition. The openings are significant relative to the bathhouse usage, but the current sash are not significant and should be replaced with 8-light sash.

Floor - 1818 Building

The current floor is concrete that dates to the 1918 alterations. It is noted as a "granolithic floor" in the 1918 construction drawings. There are raised sections of concrete along the north and south walls that are about 2' wide and 2-3" above the rest of the floor. These served as platforms for the

lockers and were raised to keep the bottoms of the lockers above the damp floor. Based on one newspaper description, a wood floor was probably installed in 1899.

The condition of the current concrete floor is serviceable with some minor patching needed.

Floor - 1899 Addition

The current floor is concrete and dates to the 1918 alterations. There is also a 3' x 3' x 3" high concrete pad near the former toilets that may have been installed for a heating stove in the late 1930s.

The concrete floor has several plugged holes for former drains along the north wall from former toilets, and some other minor imperfections, but is otherwise serviceable.

Chimney

The granite chimney was added in 1954 on top of the north wall of the magazine to vent the furnace installed at that time in the 1899 addition. It has copper flashings at the roof.

A 6" round vent stack in the 1899 addition is noted for removal in the 1954 drawings. It first shows up in the 1941 photograph (Fig. 9.4). Its function is not known. It may have been the flue for a small stove to heat the addition after it was converted to storage use, or it may have been a plumbing vent for the toilets added to bring them up to code in the late 1930s. The presence of 3' x 3' x 3" raised concrete slab adjacent to the stack location suggests it was for a stove.

The chimney's copper flashings at the roof are in very poor condition and there are some open joints. Other than a need for repointing and new copper flashing the chimney appears to be in sound condition. However, it is not significant to the period when the building was a bathhouse and should not be retained unless it is needed to vent new utilities.

Paint

As noted in the previous sections, the interior surfaces of the masonry have been painted white. The interior matched boarding in the 1899 addition is also painted with a utilitarian grey green that is now dark and dingy with age and dirt. The underside of the remaining original roof sheathing and rafters retain their original dark brown stain. The stain has darkened with age and soot from the c. 1950 fire. The exterior woodwork is painted with what appears to be a medium brown opaque stain, except that the windows and door trim are painted green.

All the painted finishes both inside and outside are severely worn with extensive areas of peeling and/or extremely dirty surfaces. As lead may be present in the paint, all surfaces should be tested for the presence of lead or other hazardous materials prior to starting any renovation work or paint removal.

Mechanical and Electrical Systems

There is a ducted forced-air heating system, including furnace, ductwork, and controls, all assumed to date from 1954. Ventilation is entirely by operable window sash. Visible plumbing is limited to the fixtures and piping in the 1954 toilet room in the southwest corner of the 1899 addition. The 1954 drawings show a house drain and underground 4" cast iron sewer pipe leading from the

toilet and lavatory sink to a manhole off the northwest corner of the building. There is currently no electrical power in the building, although there is a meter and switchgear in the “heater room” as it is termed in the 1954 renovation drawings. Lighting appears to date from 1954, and is limited to suspended incandescent exposed-bulb fixtures with metal reflectors, in all major spaces of the building; power distribution is by means of mostly-exposed conduit and a limited number of receptacles, scattered throughout the building.

The furnace and its controls are obsolete and inoperable, and the ductwork in poor condition. The plumbing is also obsolete and non-functioning. It must be assumed that the sewer line to the manhole is also no longer usable, due to inevitable corrosion from lack of use. The existing electrical service, distribution, power and lighting systems are entirely outmoded, in poor condition at best, and in need of wholesale replacement from the service on up. None of the existing heating, plumbing or electrical systems are of historic significance, except possibly the concept of operable window sash for ventilation. All the systems should be removed and replaced with systems appropriate to the new use of the building. Whether or not to install operable window sash for ventilation will depend upon the future overall HVAC design.



ILLUSTRATIONS



ILLUSTRATIONS

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1.1: Detail of the 1777 Pelham map of Boston showing the powder magazine built in 1773 at the base of Beacon Hill. Note that a wall is shown around it and it has two buttresses like the Captain's Island magazine. It was in use until about 1804.



1.2: 1745 map of Boston showing the powder house and watch house erected on the Common in 1707.

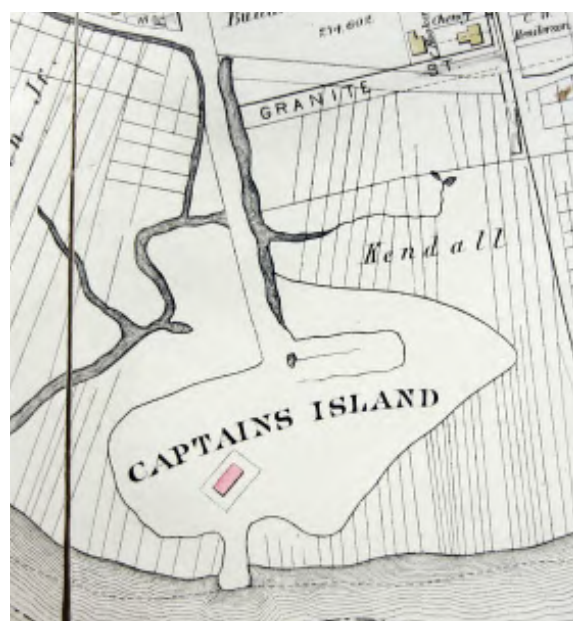
1.3: Detail of 1777 Pelham map of Boston and environs showing the fortifications erected in 1775 and 1776. The powder magazines in use at that time (excluding magazines within fortifications) were the Charlestown Magazine (in present day Somerville) marked with a yellow circle, and the Beacon Hill Magazine, marked with a red arrow and shown in more detail in 1.2 above. The location of the magazine built on Pine Island in 1802 to replace the Beacon Hill magazine is marked with a blue circle. The location of the magazine built in 1818 at Captain's Island is marked with the red circle.



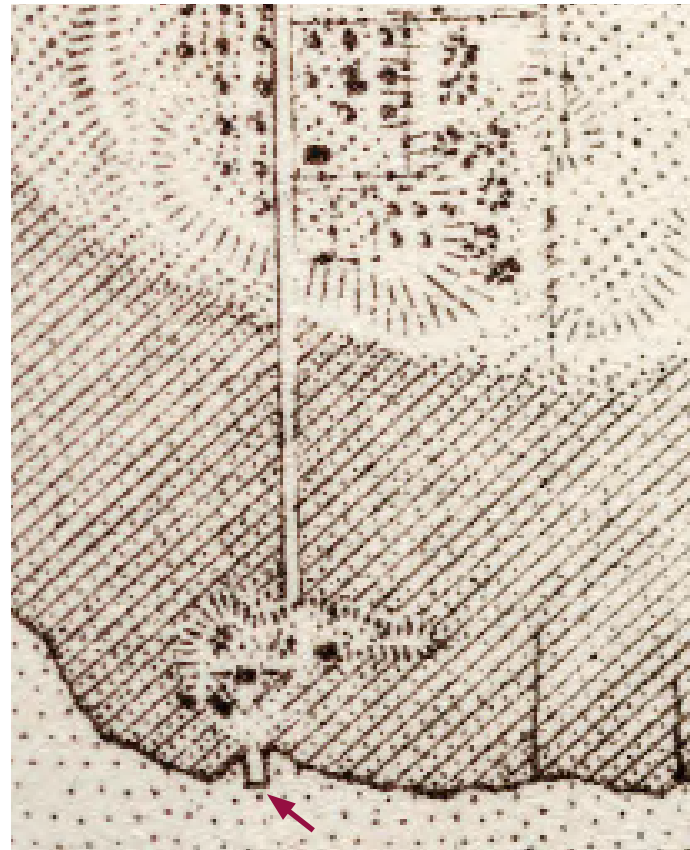
1.4: Detail of 1832 map of Roxbury showing the Pine Island Magazine (red arrow) that was built in 1802.



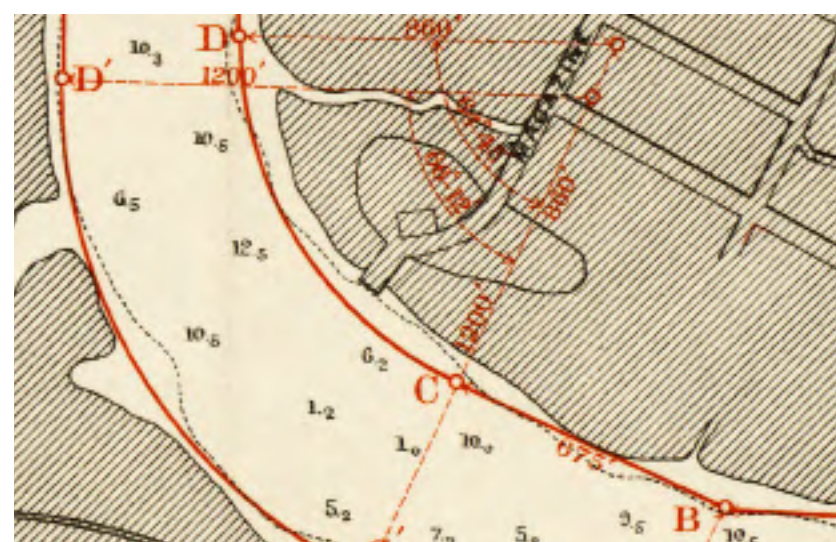
2.1: Detail of a copy of an 1824 map by Peter Tufts showing the magazine with a partition at its center, doors in its end walls, and the wall surrounding it with a single door facing the road. The stone pier is not shown, but was a continuation of the road into the river. The small rectangle marked with the red arrow may be the small house erected in 1819 (not drawn to scale). The rectangle marked by the blue arrow may be the well that was dug in 1817.



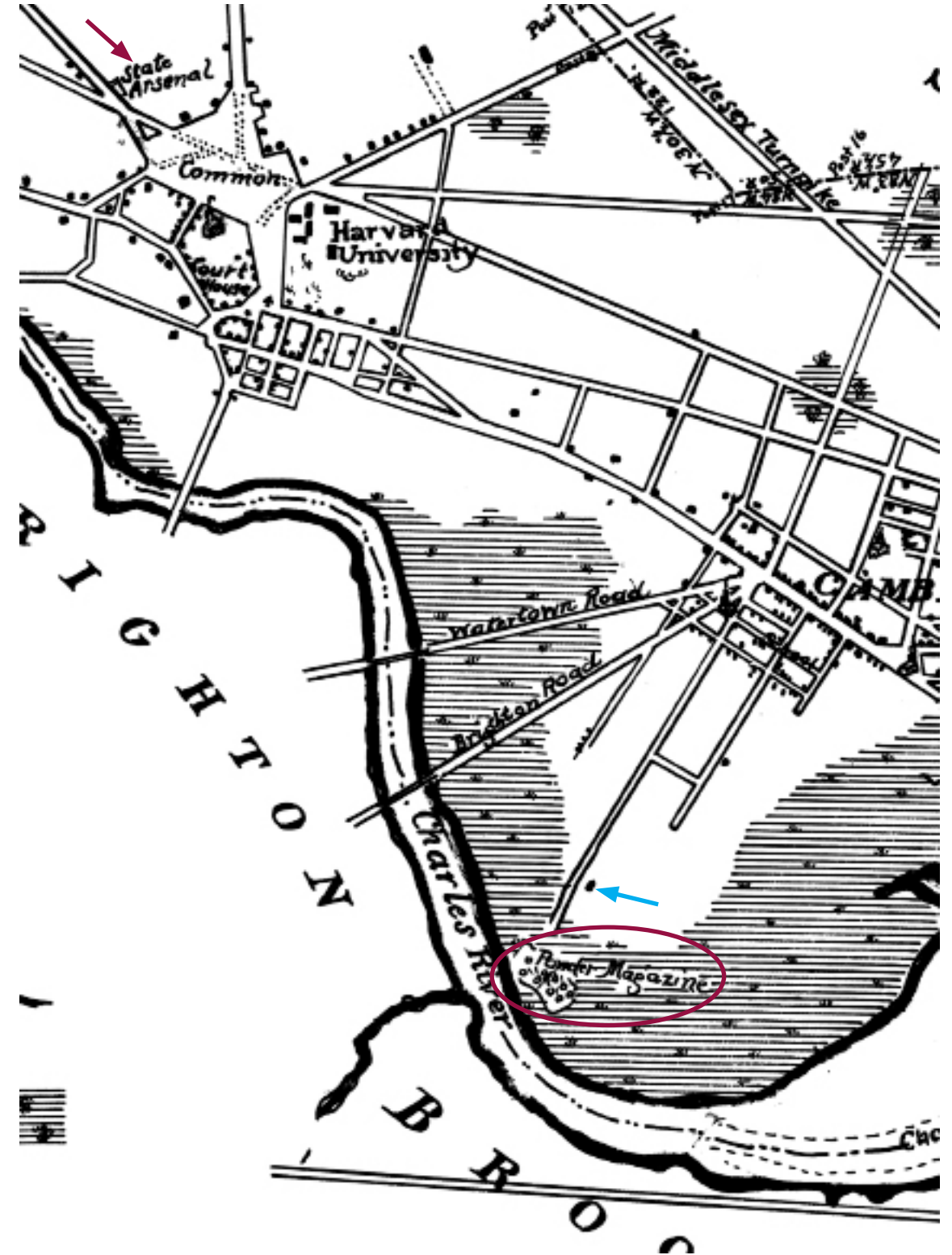
2.3: Detail of 1886 atlas of Cambridge showing the magazine on Captain's Island with its brick wall around it and the stone pier jutting into the river.



2.2: Detail of 1857 Boston Harbor Chart (surveyed in 1847). The red arrow points to the stone pier built in 1817. The small black rectangles on Captain's Island just above the pier are the magazine and the small house. It is unclear what the other dark blobs represent, if anything (perhaps trees). Peter Tufts' house and garden are shown at the top of the detail on Magazine Street.



2.4: Detail of 1890 map of the Charles River showing the stone pier still in place and the magazine without its outer brick wall.



2.5: Detail of 1830 map of Cambridge. The location of the 1817 powder magazine is shown by the red circle, and the state arsenal that was built at the same time just west of the Cambridge Common is indicated by the red arrow. The only house near the powder magazine at that time was Peter Tufts' house on Magazine Street (blue arrow).

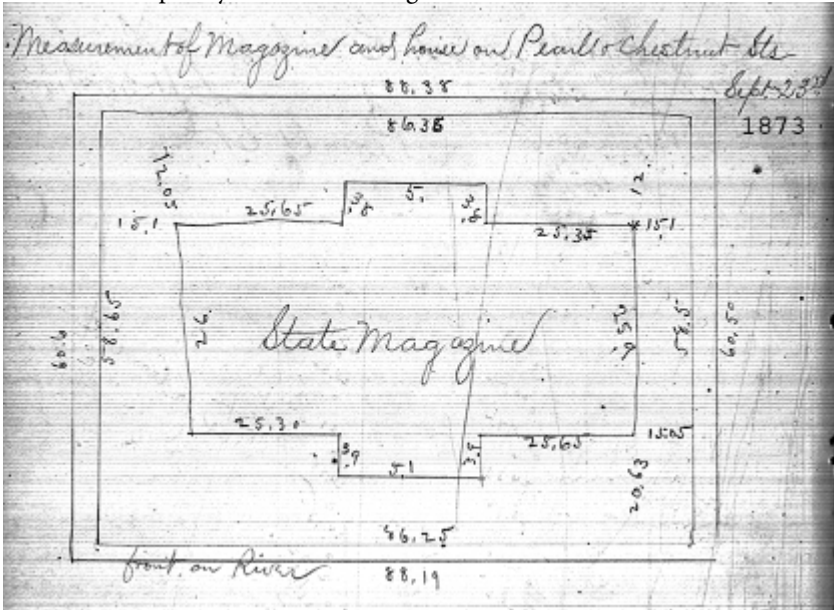
NOTICE TO MASONS.
SEAL**E**D Proposals will be received at the Office of the Quarter Master General, State House, until the 8th October next, for building by contract a POWDER MAGAZINE, on Captain's Island, so called, in Cambridge.

The foundation to be of stone, 3 feet 6 inches deep, from the surface of the ground; 4 ft 6 ins. thick at the bottom, and 4 feet thick at the top; the wall built on this foundation to be of granite, 4 feet thick, 14 feet high, and 9 feet to the spring of the arch, which is to be a semi-circle 16 inches thick; the roof to have a quarter pitch, and to be well slated; and the space between the roof and the arch be filled in with stone--the length of the Magazine fifty-six feet, the breadth twenty-eight feet--a partition wall in the centre 3 feet thick, on a suitable foundation; the buttresses to project without the wall 4 feet 6 inches, and 5 feet 6 inches in breadth; two ventilators in each room, with copper strainers; every other course of the wall to be a binder.

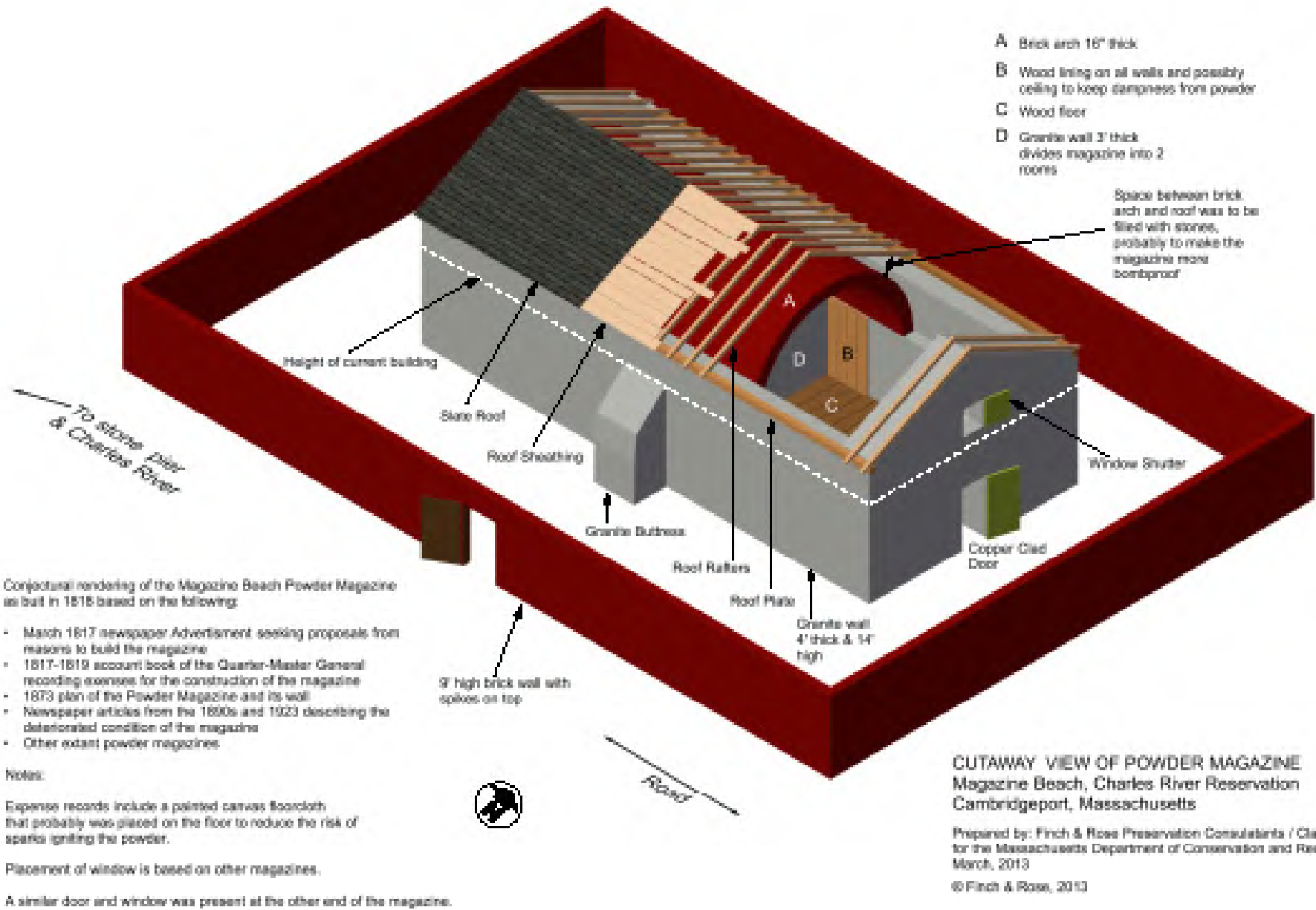
The proposal must include Stone, Lime Mortar, Labor, and every other material for the Masons work--the whole to be of the best quality, and the work executed in the most faithful manner. The Magazine to be completed on or before the 31st day of December next; but in case the weather should be such as necessarily to delay the work, the time will be extended to the 1st May, 1818.

AMASA DAVIS, Agent.
Boston, September 24th, 1817. 4p

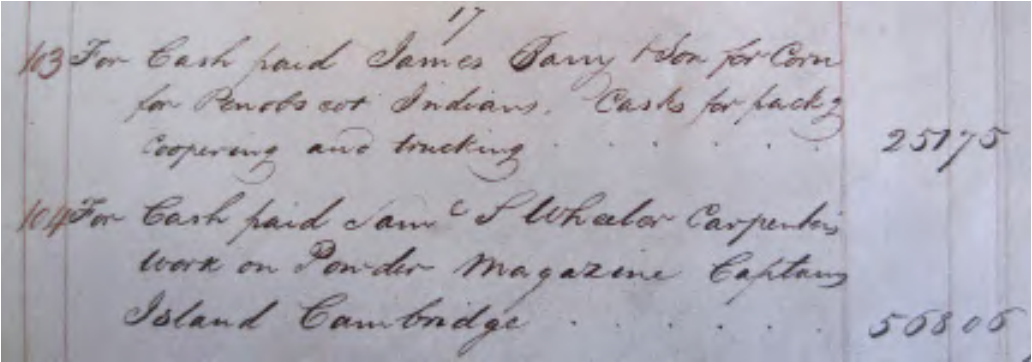
3.1: 1817 Newspaper advertisement seeking proposals from masons to build the powder magazine on Captain's Island. This provides considerable detail regarding the stone masonry, but does not specify whether the arch is to be stone or brick, does not mention the brick wall, and does not include carpentry work. However, the *Quarter Master General's Account Book* lists substantial payments for lumber, bricks, and carpentry work for the magazine.



3.2: 1873 plan documenting the dimensions of the magazine and the wall surrounding it.



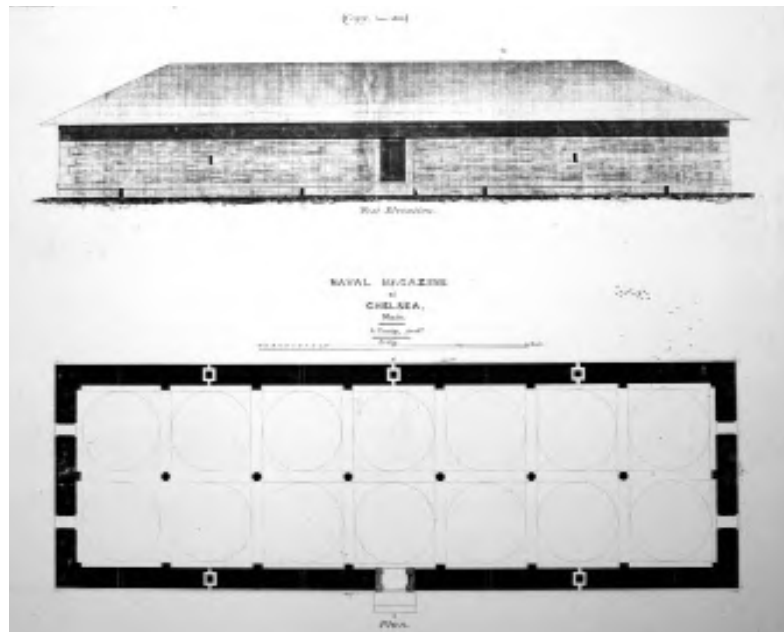
3.3: Conjectural rendering showing cutaway view of original construction details.



3.4: Sample of payments for the construction of the magazine from the *Quarter Master General's Account Book*. In this case the payment was made on October 17, 1818.



4.1: Fort Knox powder magazine C in Penobscot, Maine dating to 1840s.



4.4: Drawing by architect Alexander Parris for the powder magazine he built at the Chelsea Naval Hospital site in 1837 as the magazine for the Charlestown Navy Yard. He built a 32' x 80' magazine with similar details at the Watertown Arsenal in 1817.



4.6: The 1837 Chelsea magazine is now enclosed within this larger magazine that was built in the 1860s.



4.2: Interior of Fort Knox powder magazine A showing original board sheathing with studs fastened to granite wall with metal tabs embedded in the mortar joints (arrows). A similar method might have been used at the Captain's Island Powder Magazine, but no evidence remains for this.



4.7: Interior of the Chelsea magazine showing the sophisticated shallow brick domes springing from segmental brick arches that Parris used to form the ceiling of the magazine. It is thought that he used a similar system in the 1817 Watertown magazine.



4.3: State Powder Magazine in Baton Rouge, Louisiana showing a similar brick wall around the magazine. The Baton Rouge Magazine is much larger than the Captain's Island Magazine.



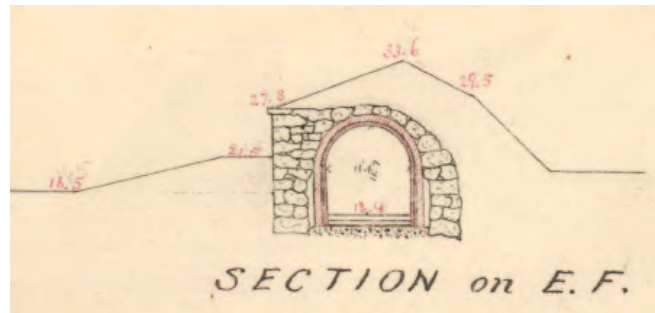
4.5: Ruins of fort at an unknown location showing the construction of a brick semi-circular arch similar to the arch in the Captain's Island Magazine. In this example the arch is 24" thick rather than 16".



4.8: Exterior wall of the Chelsea magazine.



5.1: 19th century photograph of a powder magazine at Fort Pickering in Salem that is typical of magazines constructed within fortifications. It is partially below ground and covered with earth in order to make it more bombproof.



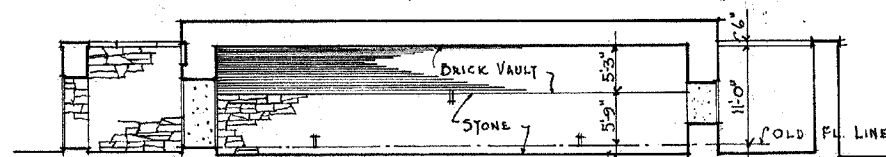
5.4: Section through the Fort Pickering Magazine from a plan drawn in the 1860s.



5.7: Current view of the interior of the Fort Pickering magazine. It is not known if it had wood lining the walls. The remnants of whitewash on the bricks suggests it did not. The rectangular openings are indirect vents.



5.2: Photograph of interior of powder magazine at the US arsenal in Pikesville, Maryland. A note on the HABS drawings of the magazine says "The building was formerly lined with wood sidewalls, ceiling and floor. All fastenings were counter-sunk and plugged to avoid a possible spark. The pintles are of bronze." The magazine may be as early as 1816. It was surrounded by a wall as shown in the sections below.



4.5: Longitudinal section of the Pikesville Magazine and its wall.



5.8: Newburyport Powder House. It is 18' in diameter and is typical of the structures built by towns for the local militia and powder merchants.



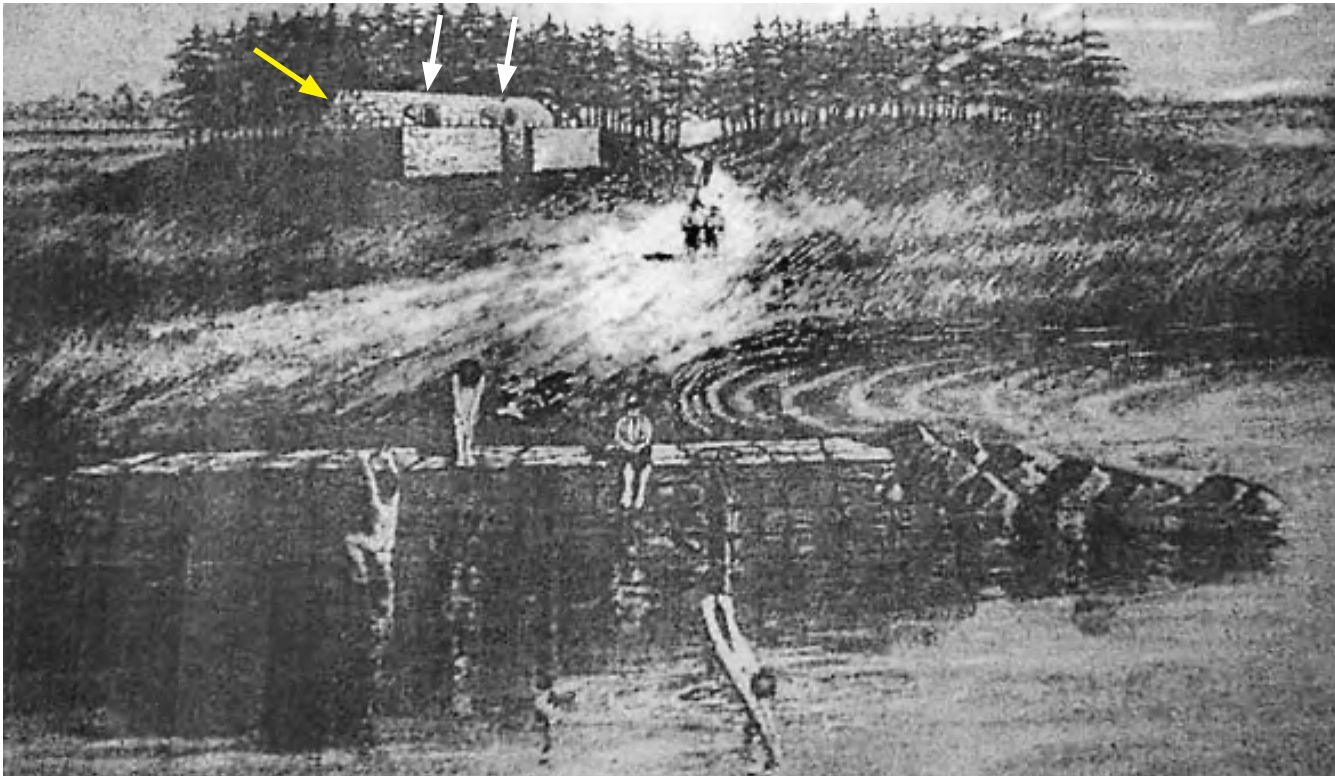
5.3: Photograph of interior of powder magazine at Fort Monroe, Hampton, Virginia showing wood lining. Magazine C at Fort Knox (Photo 4.1) has a similar board lining that follows the curve of the vault.



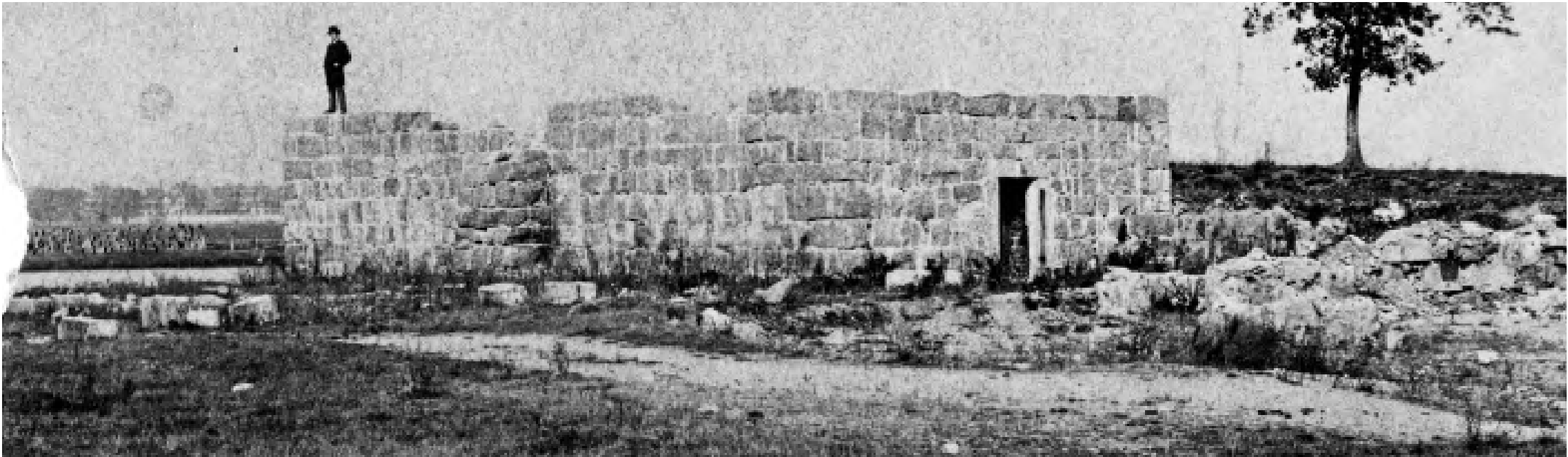
5.6: Cross section of the Pikesville Magazine and its wall. Like the Captain's Island magazine, it had roof of slates over common rafters. It also had a system of narrow indirect vents through the walls.



5.8: Interior of Newburyport Powder House showing partially reconstructed wood lining and ceiling. At left side the slots in the bricks are visible holding wood strips that serve as nailers for the wall sheathing. There is no evidence for this type of system at Captain's Island.



6.1: Drawing of Captain's Island as it was in the 1880s, published in a May 20, 1923 *Boston Sunday Post* article by Thomas W. Rivers describing the Island and powder house as remembered from when he was a boy. Rivers states the published drawing is an exact copy of a drawing he made as a boy in the 1880s. The drawing clearly shows the wall surrounding the magazine and the stone pier at the river's edge, but is less clear as to the details of the magazine. It is unclear whether the drawing shows the slate roof, or the upper surface of the masonry arch with the slate and rafters having been demolished. The latter seems more likely. The arrows point to what appear to be dormers, but cutting a window-sized opening into a masonry arch is not simple, as the dormer would need to have a barrel arch at a right angle to the main arch to distribute the thrust of the main arch. These could be the "ventilators" specified in the "Notice to Masons", rather than windows. A black spot on the end wall (yellow arrow) might be a window, as this is where windows are often located in other powder magazines. The text of the article is transcribed in the Appendix.



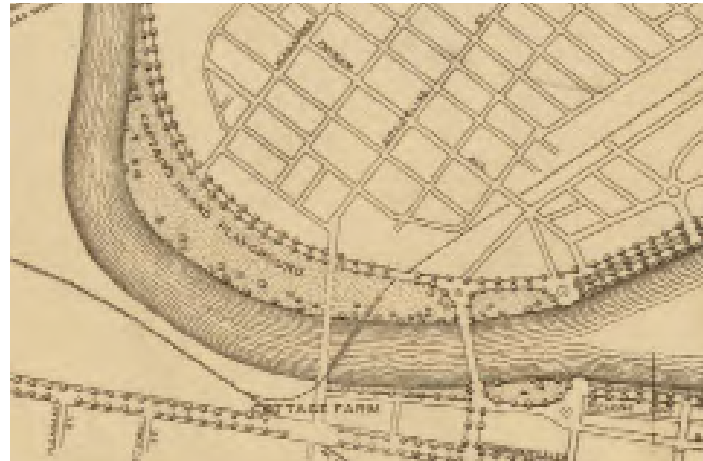
6.4 (left): C. 1892 photograph of the south side and east end wall of the magazine showing conditions similar to photo 5.2 with 8 courses of stone remaining in place along with the jamb stones for the east end entry. Again there is no evidence of former slits for ventilation or windows. The height of the 8 remaining courses is about 11' above grade. As the side walls were originally specified to be 14' high, the top 3' of the south wall is missing. More is missing from the end walls as these would have risen to about 21' at the peak of the gable roof. A considerable amount of masonry debris is visible on the ground including a number of dressed stones. The June 6, 1900 newspaper article describing the bath house conversion states that "there is plenty of available stone lying about ... to use for patching".



6.2 (above): Photograph of the west end and south side of the magazine from the 1890s showing its condition prior to being renovated in 1899 as a bathhouse. The slate roof, brick arch, and all doors are gone. The lower 8 courses (i.e., 11') of granite and the door openings remain intact, although portions of the eighth course are missing. The small chinking stones set in the joints also remain intact and are visible in this photograph. The top of the buttress is missing. There is no evidence of openings for ventilation (usually narrow slits) or windows in the remaining wall.



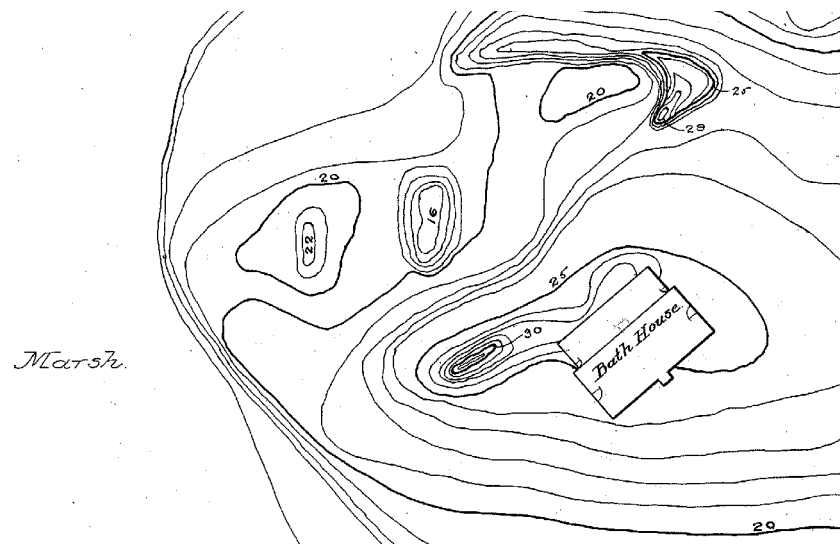
6.3 (right): 2013 photograph of the south corner west end wall. Detailed comparison of the individual stones in this photo with the 1890s photo above (5.2) shows that the eight courses present in the 1890s are still intact with most of the stones in the same position in both photographs.



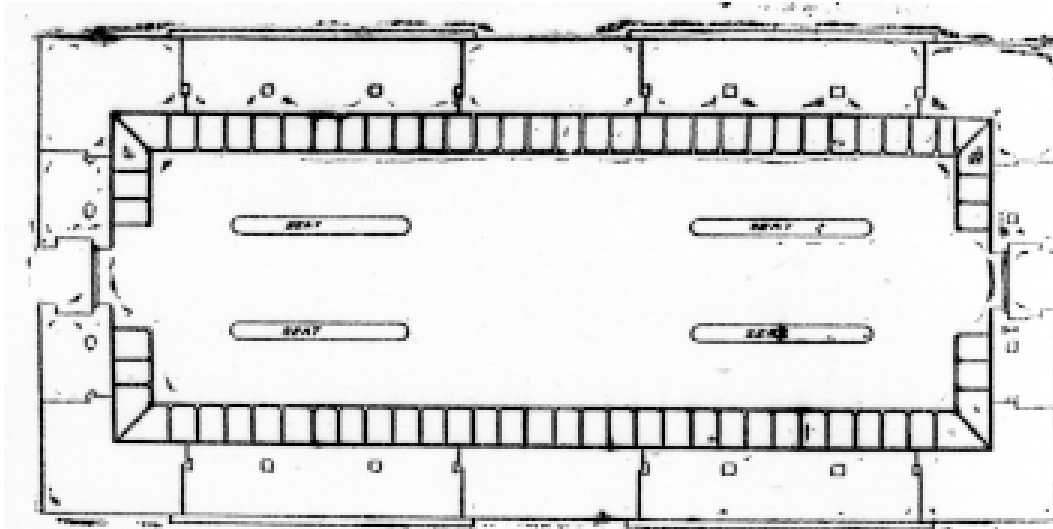
7.1: Detail of March 1894 plan by Olmsted, Olmsted & Eliot, Landscape Architects, titled "Sketch Plan Showing Existing and Proposed Public Reservations Upon the Banks of the Charles" showing the Captain's Island area as a proposed playground. The plan illustrates that active planning for the future use and improvement of this area was occurring in the 1890s as part of overall planning for the Charles River, although the powder house is not singled out.



7.4: Sketch of the powder house with the alterations to make it a bath house completed. This was included in a July 8, 1899 article in the *Cambridge Chronicle* reporting that the conversion had been completed the previous week and was now open for the use of bathers. See 7.7 for the text of that article describing the bath house.

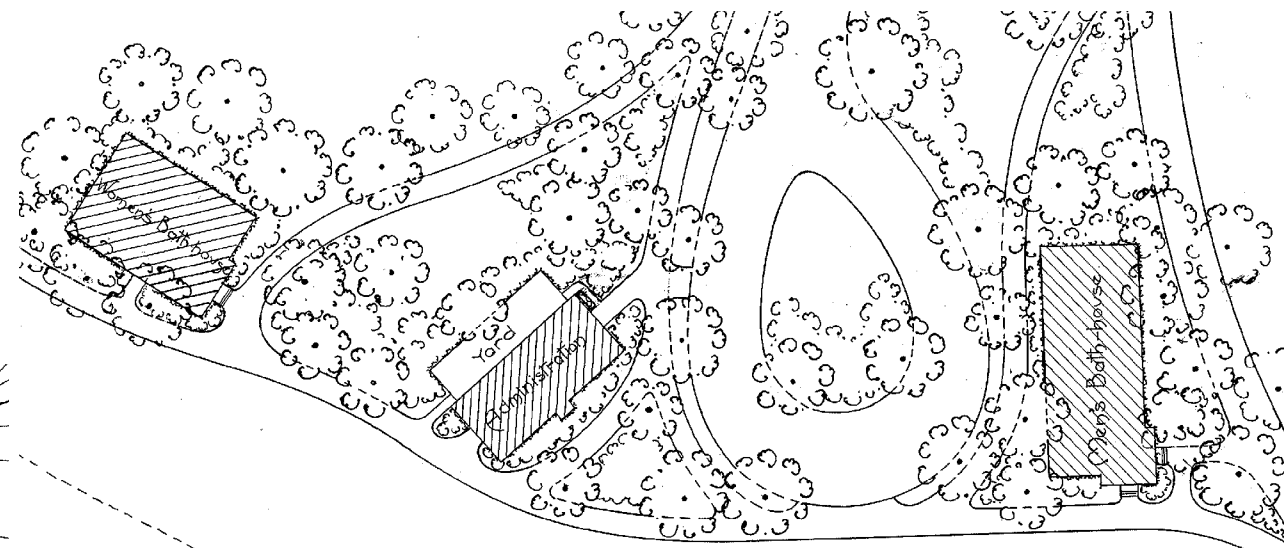


7.5: Detail of topographic plan by Olmsted dated July 20, 1899 that appears to be documenting the existing contours of Captain's Island showing the powder house with the alterations for use as a bath house that had just been completed in early July. The plan shows the walled open yard that had been added on the north side of the bath house. The contours were substantially altered the following year.

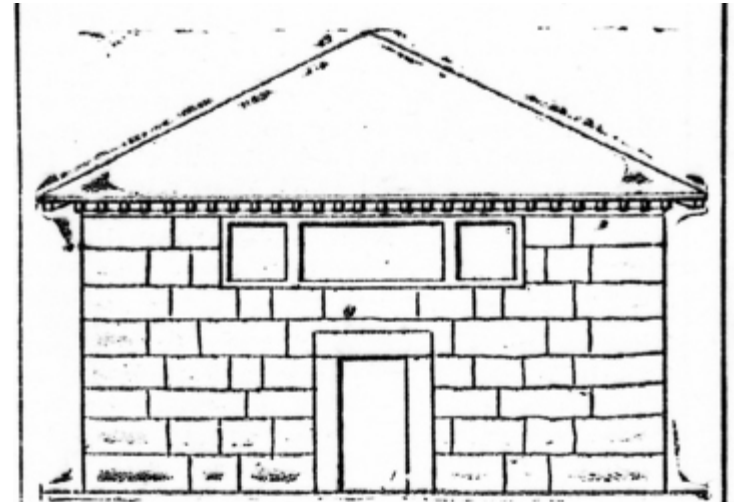


INTERIOR OF PROPOSED BATH HOUSE ON CAPTAIN'S ISLAND.

7.2: Proposed plan by Olmsted Brothers for the conversion of the Captain's Island powder house to a bath house for men and boys. The plan was published in an article in the *Cambridge Chronicle* on June 6, 1899 along with the elevation in 6.3. The article states that a plan to build a new bath house was rejected due to its projected \$30,000 cost, and that work was to start shortly on renovating the powder house to serve as the bath house. As completed in July of 1899 the lockers were limited to the north and south walls, and an addition was constructed on the north side enclosing an open yard.



7.6: Detail of plan by Olmsted dated August 1, 1899 that showing a proposal for additional bath houses with the converted powder house in the center. This and other proposals were generated because the popularity of the beach, once the powder house had been converted to a bath house, indicated that additional bath houses were needed.



ENTRANCE TO BATH HOUSE.

7.3: Proposed end wall elevation by Olmsted Brothers for the conversion of the Captain's Island powder house to a bath house for men and boys that was published with 6.2 in the June 6, 1899 *Cambridge Chronicle*. As completed in July 1899 the only change from this drawing is that 3 equal-sized 8-light sash were set in the window opening.

The old magazine, which is supposed to have been built by the British in Revolutionary times, has been made into a locker house. The middle wall of stone was removed, leaving a clear sweep inside the four walls of the building for the use of bathers. Here there are 136 large lockers and a number of settees in the centre of the room to be used by the bathers before or after going into the water. A new roof has been added to the structure, with an open space beneath it for ventilation purposes. The old gray walls of the magazine have been refreshed in places, and the old mote at one side of it has been built up to a height corresponding to the other walls. Here a large number of tools and other implements can be kept from time to time as the park commission may need them in its work about the beach. The interior finish and the floor is of hard pine, while the lockers are made of the same material. At the front of the building there is a small space partitioned off and furnished with a counter where the keeper of the place can have his headquarters. The whole interior woodwork has been varnished over neatly by Woods Bros., the well known Winsor street painters. The inside measurement of the building is about 18 by 48 feet. The lockers, which are each 12 by 14 inches in width and depth, respectively, and three and one-half feet high, are arranged in two tiers on two sides of the structure.

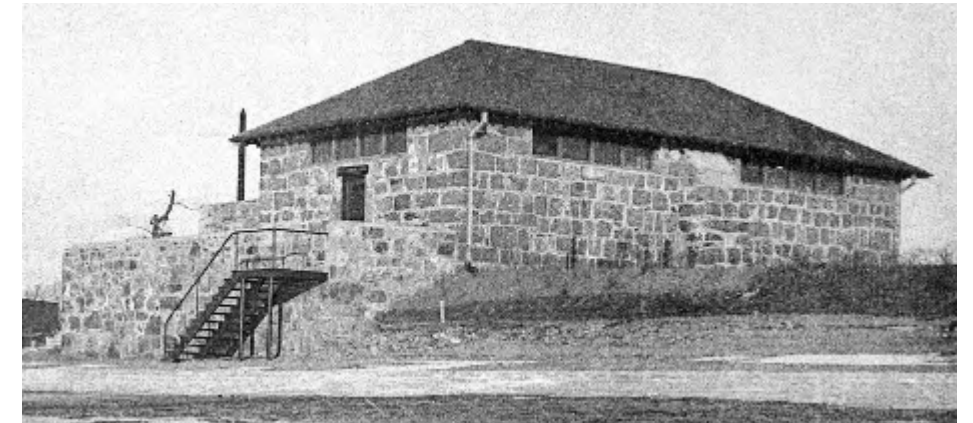
7.7: Portion of the July 8, 1899 article in the *Cambridge Chronicle* reporting the completion of the work converting the powder house to a bath house.



8.1: Photo on a postcard probably taken in 1899 or early 1900 showing the beach in use while construction is taking place for the additional bath houses and grading the site. The regrading around the magazine shown in 8.2 has not yet occurred. The postcard is postmarked 1902. The immediate popularity of the beach in 1899 resulted in the construction of the additional bath houses shown in 8.4 below.



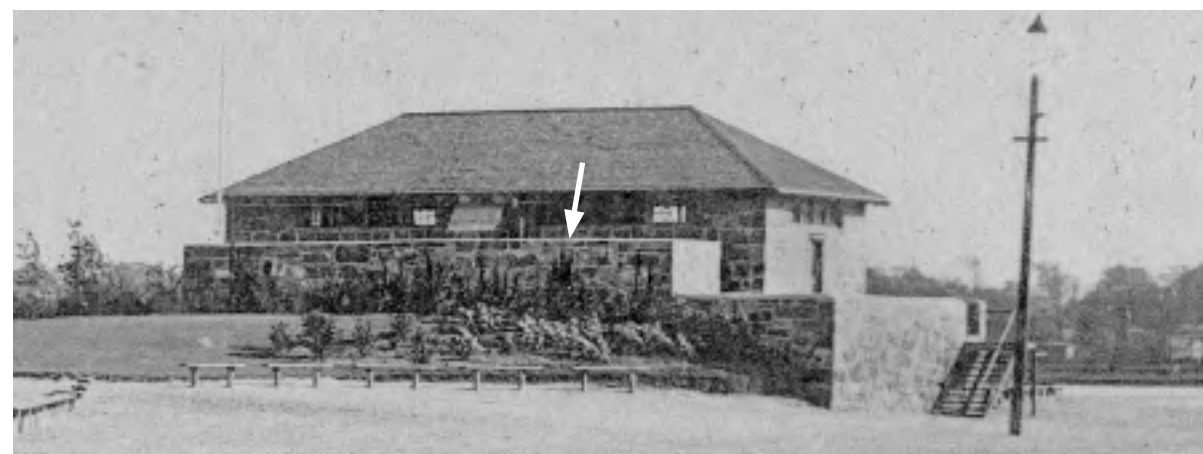
8.2: Photo taken in 1900 showing extensive regrading in progress around the powder house. As a result of this regrading, the potential for archeological resources is minimal except perhaps within a few feet of the walls of the magazine and under its current floor.



8.3: Photo from the *Cambridge Parks Dept. Annual Report* of 1900 showing the regrading completed with a new stone retaining wall forming a terrace in front of the bath house door. A steel stair leads from the terrace down to the beach. Landscape plantings are not yet in place.



8.4: Photograph from *Cambridge Parks Dept. Annual Report* of 1901 showing the men's and women's bath houses as completed in 1900-01 with the powder magazine in the background. The new bath houses were wood frame and were destroyed by fire in 1916. A new brick bath house was constructed in 1918 to replace these. That structure was replaced in 1950 by the current bathhouse and outdoor swimming pool. The beach was closed to swimming due to pollution in 1949.



8.5: Detail of photograph 8.4 from *Cambridge Parks Dept. Annual Report* of 1901 showing the regrading of 1900 completed with new landscape plantings in place. The north addition (arrow) is simply a wall enclosing an open yard. The side walls of the yard ended about 3' from the north wall of the magazine to form entries to the yard. There was no entrance to the yard from within the magazine. The function of the yard is not known. Perhaps there were open air showers in it, or possibly it was used for tool and equipment storage as suggested in the July 8 Cambridge Chronicle article describing the newly opened bath house (see 7.7).



8.6: Detail of photograph from *Cambridge Parks Dept. Annual Report* of 1901 showing the east end of magazine and the 1899 north addition (arrow) that enclosed an open yard. The 8 light sash in the magazine are clearly visible, as is the gutter with a downspout on the right side of the photo. The large number of courses in the roof indicate it is wood shingles rather than slate. The white post at the left side of the addition is a flag pole.



8.7: Detail of a 1935 photograph of the beach from the river showing the changes made in the 1918 renovation. The stair to the beach from the terrace has been removed and replaced by a paved path sloping down to the beach. Low concrete retaining walls hold back the grade at the edge of the beach. The north addition has been closed in with a roof and the entry through its west wall has been filled in with stone.



9.1: Photograph taken in the 1930s of the east end of the magazine showing the alterations made to the exterior in the 1918 renovation. The entrance has been widened to 7' and raised to the underside of the windows, the north addition has been closed in above the stone work, the wood shingle roof has been replaced with slate, and the gutters and downspouts removed.



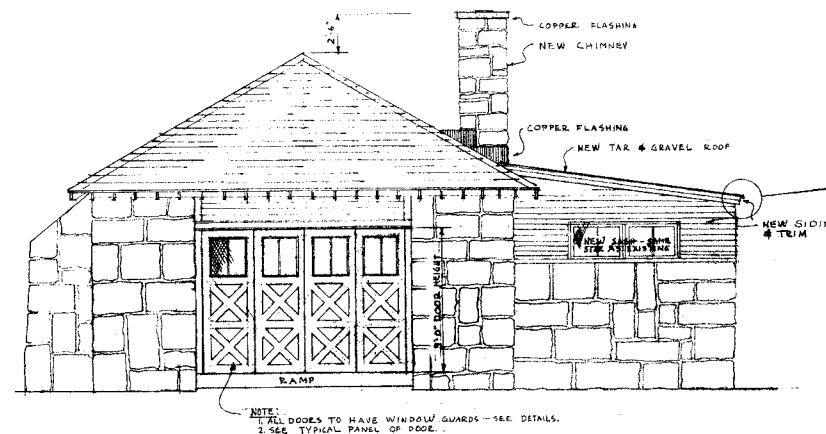
9.2: Detail of 8.1 showing the detailing of the 1918 door with a matched boarding in the panel set at on a diagonal. The original 1818 dressed granite door jamb has been reset to frame the entry.



9.3: Photograph taken in the 1932 of the east end of the magazine showing the alterations made to the exterior in the 1918 renovation. Note that the bottom course of stone is fully exposed and there is a step to get up to the level of the interior concrete floor. The number of courses of the slate roof can be counted for comparison with the number of courses in the 1899 wood shingle roof in photo 8.6. Based on the extent of ivy growth at the corner, this photo appears to be a few years later than 9.1.



9.4: Photograph dated 1941 of the east end of the magazine showing several alterations made since 8.3 was taken in 1932. A concrete ramp has been added at the door, probably to facilitate moving items for storage into the building. The pile of gravel or debris to the right of the door suggests the building is now being used for maintenance purposes rather than as a bath house. A stack is now visible above the roof of the addition. Based on 3' x 3' x 4" concrete platform that is still present on the floor at this location inside the addition, the stack may have been to vent a stove to heat the addition for the maintenance staff.



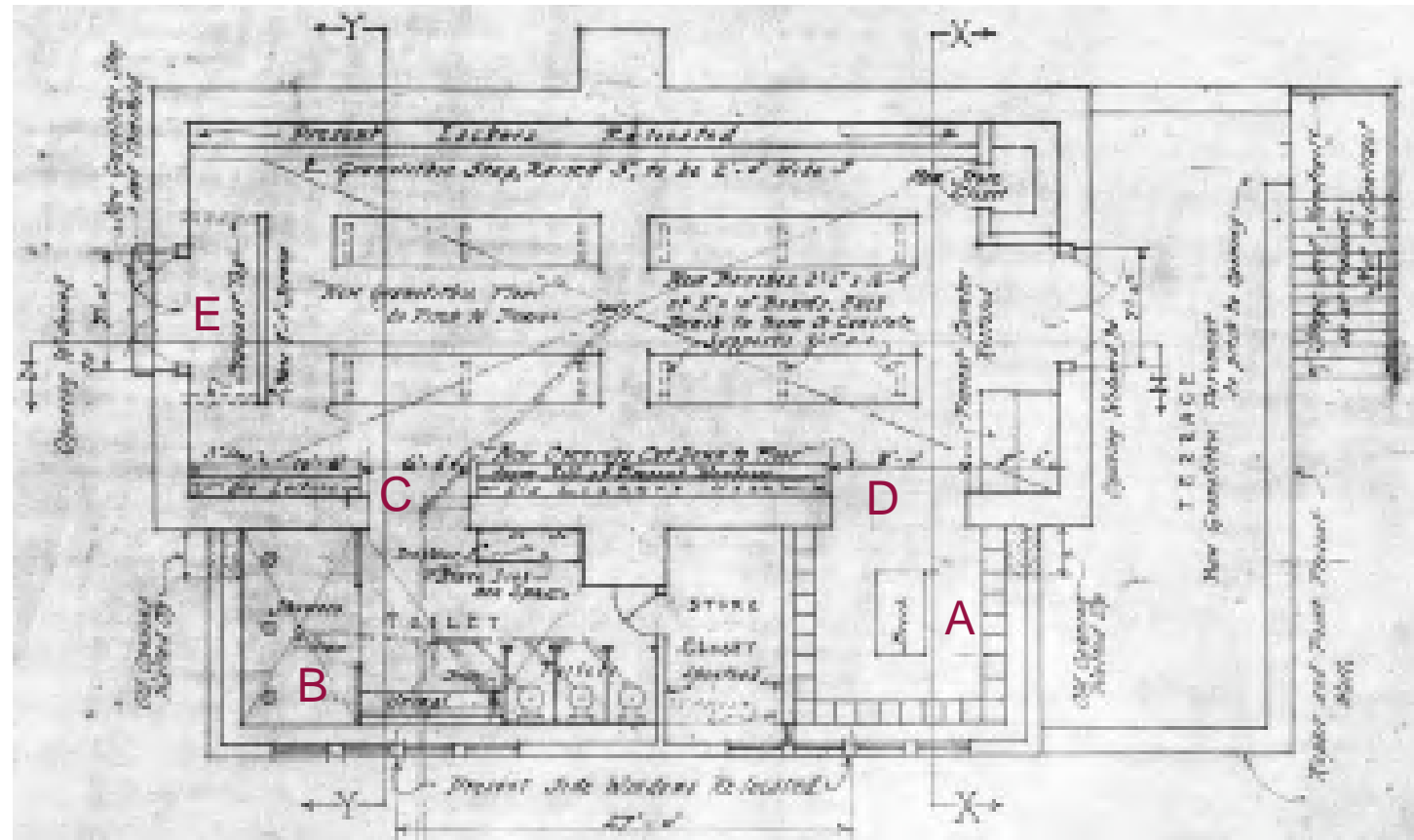
9.6: Drawing of the east end for the changes in the 1954 renovation.



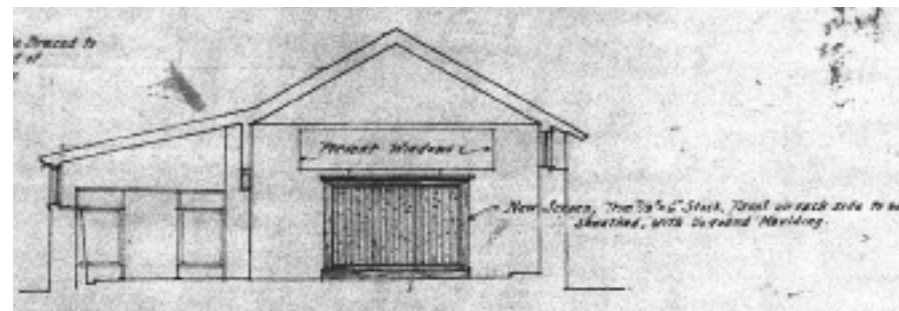
9.5: Photograph dated 1976 of the east end of the magazine showing the door opening as widened to 13' 8" in 1954. It appears to have an overhead door rather than the doors shown in the 1954 drawings. Note that the grade around the building has been raised to about half way up the first course of stone. The stone chimney has been added, along with a pair of windows at the end wall of the addition, as per the 1954 drawings.



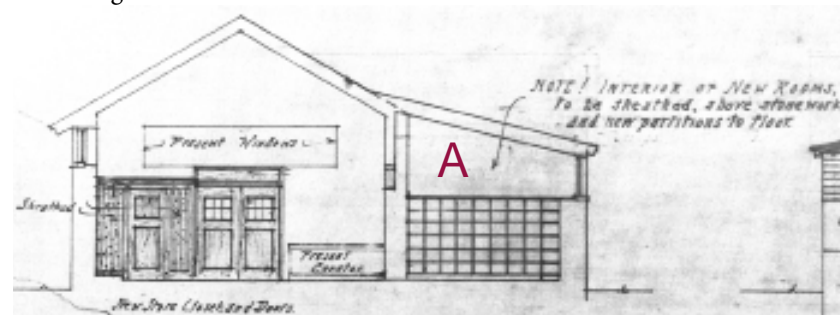
8.7: 2013 photograph of the east end elevation.



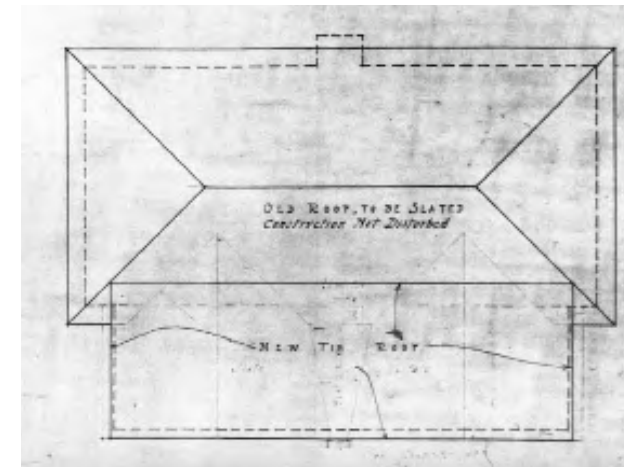
10.1: Floor plan showing major changes to the interior, the entries, and the north wall. The space marked “A” appears to have been outfitted with square cubicles to store the rental bathing suits and towels. An 8’ wide section of the north wall of the magazine was removed at “D” to provide access. A 6’ wide section of the wall was removed at “C” for access to the new toilets and showers. “B” marks the shower room. The two banks of windows in the north magazine wall were moved to the north wall of the addition. An 8’ high wood screen was constructed just inside the east entry at “E” to provide visual privacy for the main changing area.



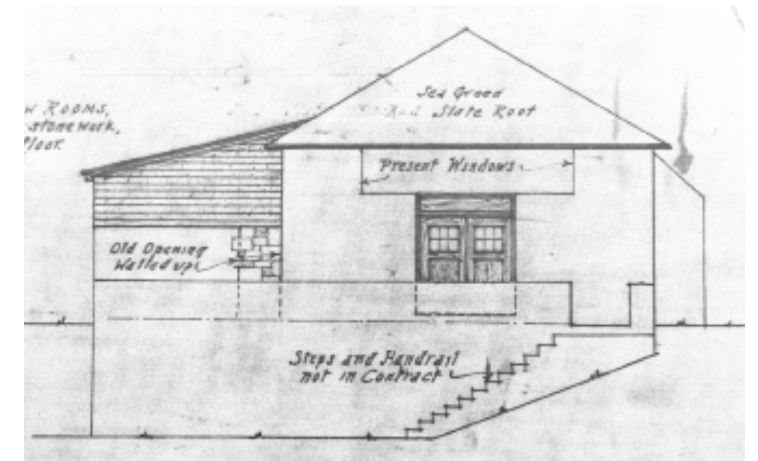
10.5: Section at Y-Y on plan 10.1 looking towards east entry showing the 8’ high wood screen that was placed a few feet inside the entry to provide privacy for the changing area. It also shows that the partition at the shower room did not rise to the ceiling.



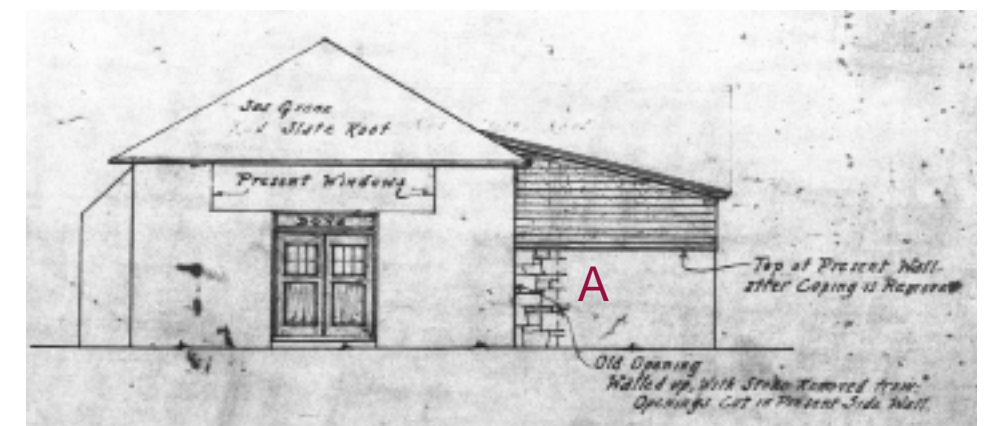
10.6: Section at X-X on plan 10.1 looking towards the west entry. The woodwork on the wall marked “A” appears to be a series of cubicles. No ceiling or tie beams are shown below the roof rafters in the magazine and the addition.



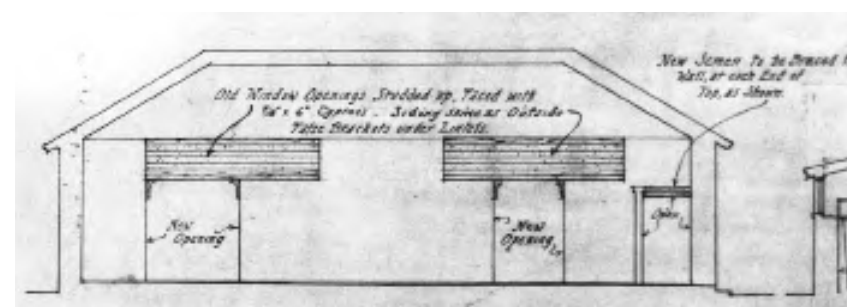
10.2: Roof plan with notes to install “sea green” slate on the magazine roof, and “tin” on the addition. One of the drawings has a faintly written pencil note at the addition roof saying T & G (tar & gravel). Whether that was a note made years later to replace the tin roof, or a change in 1918, is not known. The drawing also has faintly visible lines for a twin gable roof that apparently was an earlier design that was rejected and erased.



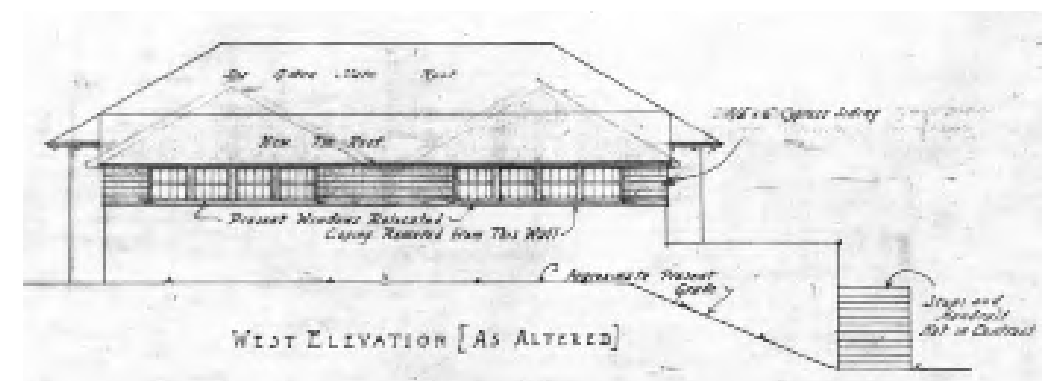
10.3: West elevation showing the entry widened and increased in height to the underside of the windows. The doors are set at the inside edge of the wall with a solid wood panel above them.



10.4: East elevation showing the entry widened and increased in height to the underside of the windows. The doors are set at the inside edge of the wall with a solid wood panel above them. Note the instructions for the work at “A” to fill in the former opening to the yard in the granite wall of the addition.



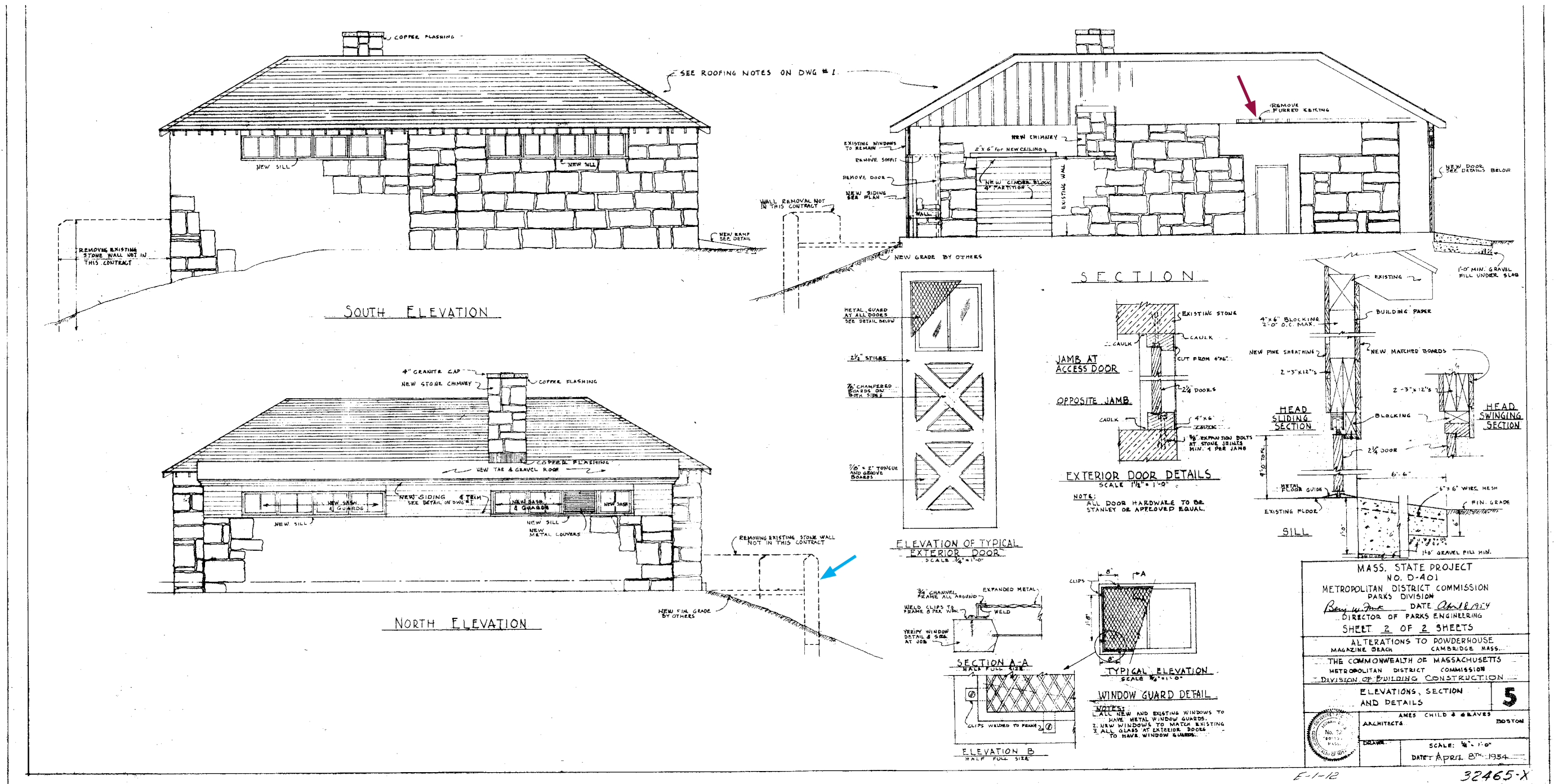
10.7: Section at Z-Z on plan 10.1 looking towards north wall of the magazine showing the new openings being cut through the wall to the addition with decorative brackets at their upper corners, and infilling of the former windows.



10.8: North elevation of the addition showing the new wood wall and windows on the masonry. Note the erased lines of the rejected design for twin gable roofs and a half timber and stucco treatment of the wall above the masonry. That design likely was too expensive.



E-1-12 32464-X



12.1: Sheet #2 of the 2 sheets of plans for the 1954 alterations to the powder house. The red arrow on the plan points to the ceiling that is to be removed together with a partition below it that is shown on the "Plan" drawing on sheet #1 (11.1). Perhaps it was installed c. 1940 when the building appears to have been first converted to storage and/or administrative use. The "Section" drawing does not show the 2" x 6" tie beams that currently exist, nor any other ceiling other than the one to be removed and a new plaster ceiling to be installed in the utility room. Whether this omission was made to simplify the drawings or an oversight, or these items were not present in 1954 is not known. It is clear from the dimensions of the tie beams that they were probably not installed until the 1940s or later. The blue arrow points to the retaining wall and terrace at the west side of the building that are noted to be removed and regraded outside of this specific contract. As the retaining wall is still present in a 1956 aerial photograph, it may have remained in place until c. 1975 when the current retaining wall was constructed. This drawing shows details for the metal grills to be placed over the window sash, the new doors to be placed in the widened east entry and the infill panel for closing up the west entry. It also calls for a new tar and gravel roof on the north addition and copper flashings. Curiously, the "South Elevation" calls for new sills under the windows but does not indicate that the 2-light sash that drawn are new sash replacing the 8-light sash installed in 1899. The 8-light sash on the south and west facades sash may have already been replaced. Perhaps the previous fire in the west roof pitch also damaged the windows in the west and south elevations resulting in their replacement.



13.1: South elevation. The stone is laid in regular horizontal courses. Most stones have been dressed to roughly rectangular shapes. There is a considerable range in the color of the stones, which is typical of Quincy/Braintree granite quarried prior to c. 1825. There are numerous large patches in the slate roof.



13.2: West elevation.



13.3: North elevation of 1899 addition. The wood siding and roof were added in 1918. The chimney was added in 1954, as was the protective screening on the window sash. Coursing of the stone is more irregular than the 1818 coursing of the south facade. Most of the stones are similar to the 1818 magazine stones in their range of color and surface texture. Most were probably salvaged from the interior partition of the magazine that was removed in 1899, the stone pier, and dressed stones lying around the site. Arrows point to examples of stone that are more modern and came from other sources. Most of slate on this pitch of the roof is missing or severely damaged.



13.5: C. 1890s photo of west (left) and south sides of the magazine as a ruin. The top course of stone in the building today is the same as the top course at the west end in this photo.



13.4: East elevation. The entry door was widened and the window above it removed and blocked in 1954. Windows in east end of addition were also added in 1954.

13.6: West and south elevations today for comparison with the c. 1890s photo at left (13.5). Note that the current site grade is about half way up the bottom course of stone. Historically the grade was at the bottom of the first course.



Sheet 13: Current Elevation Photographs



14.1: Southwest corner of magazine showing that 3'-4' long stones were alternated in each course to firmly tie the corner together.



14.4: Open joint on east facade where the original lime mortar behind the 1900 cement pointing has been reduced to sand.



14.2: Detail of south facade showing the range of color of the granite includes pink and brownish stones as well as neutral grey. This is typical of Quincy granite quarried in the 18th and early 19th centuries before the large commercial quarries started c. 1825. Note the use of chinking with small stones to fill the wider joints between stones (black arrows). Much of this is original and should be retained. The pointing is probably from 1900 and now has numerous voids and cracks. The joints were tooled with a concave line along their centers to try to make them look neater (red arrow).



14.5: Detail of south facade showing the typical size of the stones along with the poor condition of the 1900 pointing. Despite the poor condition of the mortar, the stones show little evidence of movement except for the one crack noted in the engineer's report.



14.3: Overview of buttress at south facade showing substantial mortar defects with plants growing out of some joints. Some rebuilding of this buttress may be needed.



14.6: Detail of severely defective joint in buttress that is void of mortar 16" into the joint. The interior mortar may be very deteriorated. Rebuilding the buttress using the existing stones and coursing may prove necessary.



15.1: Overview of the west end of the 1899 addition and its junction with the magazine. The terrace wall in front of the building dates to 1975. The arrow points to the crack shown in 15.2. The white line indicates the position of the 1899 opening that led into the open yard defined by the addition.



15.3: Detail at east end of north wall of 1899 addition showing the original mortar joints finished with a raised rectangular profile. Repointing on the addition should duplicate this profile. The small stones at the top are probably 1918 work to provide a level bed for the wood wall and windows.



15.2: Detail of west wall of 1899 addition showing vertical crack through mortar joints (arrow) that corresponds to the edge of the masonry installed in 1918 to fill in the 1899 entry to the open yard. The color of the mortar in the 1918 joints to the right of the crack is slightly greyer than the 1899 mortar to the left of the crack. The crack extends clear through the 2' thick wall. Most of the mortar joints have hairline cracks at the their junction with the stone, and in some places the mortar has fallen out.



15.4: Detail of interior at west end of 1899 addition. The arrow points to the same crack that is shown on the exterior in 13.2. The red line marks the former entry to the 1899 open yard.



15.4: West end of north wall showing green algae staining and dark color of stone at the base of the wall due to chronic wetting from the roof drainage above and splashback from the paved surface below.



16.1: Section of the south pitch of the magazine roof showing the variegated color of the slates from grey-green to light tan. This is typical of the “sea green” slate specified in the 1918 drawings. They are a type also known as “weathering green” because they change color as they weather. They were less expensive than “unfading green” slates which do not change color and last substantially longer than weathering slates.



16.2: Section of the north pitch of the slate on the magazine, and the tar and gravel roof on the 1899 addition with a copper flashing apron between the two. Although most of the slates appear sound at this end, the sheathing boards where the slates are missing have rotted clear through. The tar and gravel roof is of unknown age (perhaps 1954) and is assumed to be well past its service life.



16.3: Detail of the south pitch of the magazine roof above the chimney showing that not only is the slate gone, but the plywood put on to patch the roof and sheathing below it is now severely rotted. The copper flashing for the chimney is also in poor condition and needs to be replaced if the chimney is retained (the chimney was added in 1954).



16.4: Detail of the roof edge at the south facade where the projecting rafter tails and roof sheathing are severely rotted due to uncontrolled drainage off the roof edge and broken slates. This is the most severe damage observed at the rafter tails, but many have minor damage as shown in 14.5 below.



16.5: Detail of the roof edge at the south facade showing more typical rot in the rafter tails than in 16.4. At least 20% of the rafter tails show this level of deterioration due to uncontrolled drainage off the roof edge. In the 1899 construction a gutter was placed over the rafter tails, but was removed in the 1918 alterations. Exposed end grain is particularly vulnerable to deterioration when water drains over it.



17.1: Overview of magazine ceiling showing the strapping for the fiberboard ceiling and the 2"x 6" tie beams with the roof rafters and sheathing above. The ceiling was probably installed sometime after 1954, and the tie beams are likely from the 1930s or 40s (char on some indicate they predate the c. 1950 roof fire). As originally constructed in 1899 the space was open to the rafters and sheathing which were stained dark brown. The roof space remained open in the 1918 renovation.



17.4: Interior of north pitch above chimney (yellow arrow points to chimney) showing sheathing severely damaged from rot due to missing slates, and charred from past fire. Some of the rafters have fungus growth from chronic dampness (white arrow). The roof exterior in this area is shown in 17.3. At minimum all sheathing in this area will have to be replaced as will some of the rafters.



17.2: Interior of west pitch where rafters and sheathing were all replaced in 1954 due to fire damage. The vertical 1 x 6 struts were likely installed in 1954 or later as some are located on the section replaced in 1954. They were probably installed to support the framing for the fiberboard ceiling (i.e., tie beams and furring).



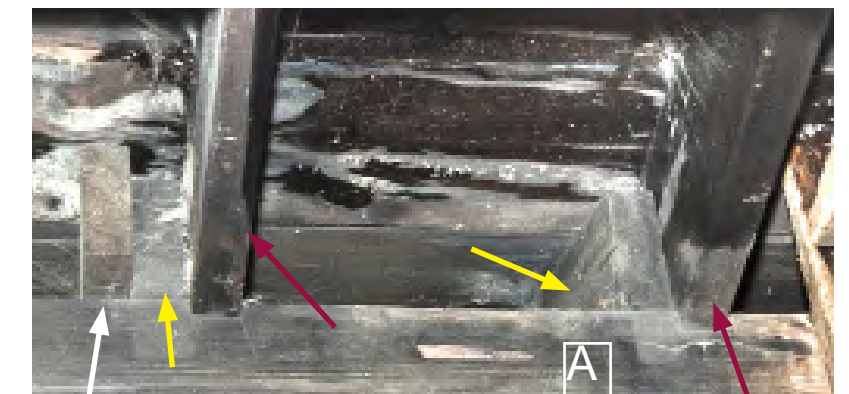
17.5: Detail of junction of main ridge with west hip. The sheathing and rafters of the west hip (upper center right corner) are obviously newer wood. The original rafters show surface char as do the few remaining boards of original sheathing.



17.3: Interior of east hip at junction with south pitch (right). The rafters and sheathing in this section are mostly in serviceable condition and retain their original dark brown stain finish.



17.6: Interior of 1899 addition looking towards its junction with magazine north wall. The lower light colored framing was installed with the fiberboard ceiling. White spots on the ceiling are probably fungus from dampness.



17.7: Detail of area at blue circle in 17.6 showing the junction of the magazine rafters (yellow arrows) with the addition rafters (red arrows) and the magazine tie beams (white arrows). The tails of the magazine rafters have been cut off at the face of the magazine roof plate (A).



18.1: Overview of south wall in magazine. Dark joints are sloppily repointed joints using an inappropriately dark colored mortar. The crack discussed in the engineers's report is barely visible and is marked with the arrow (see 19.6 for a close up). The red line marks the approximate position for the spring of the 16" thick brick arch in the magazine as built in 1818. The stones above this line would have been missing for the 16" depth of the arch and would have been rebuilt in 1899.



18.2: Overview of north wall in the magazine. The red line marks the approximate position for the spring of the 16" thick brick arch in the magazine as built in 1818. The stones above this line would have been missing for the 16" depth of the arch and would have been rebuilt in 1899. Most of the stones above this line are relatively small and irregular. The stones along the yellow dotted lines are also small and irregular. This indicates where the original interior partition was located and removed in 1899. The yellow arrow marks the base of the chimney added in 1954.



19.1: Overview of magazine interior looking towards east end entry. South wall is on the right. Yellow arrows point to raised platforms in the concrete floor that provided a base to raise the lockers above the floor. The concrete floor was installed in 1918. The previous floor was probably wood.



19.2: West end showing the modern infill of the door opening. The opening was widened to this width and height in 1918. The original granite jambs (arrows) were repositioned to their current location in 1918. The original jamb stones are also present on the exterior side. That a set of jamb stones was placed on both the exterior and interior indicates there were probably inner and outer doors when the building was used as a powder magazine.



19.3: Detail of north wall (18.2 at the yellow dotted line) showing the smaller, irregular stones where the wall was rebuilt above the spring of the arch and where the central partition was removed.



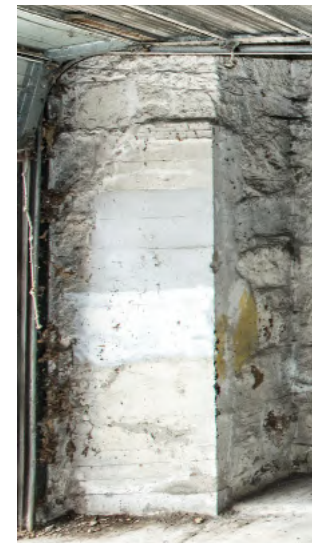
19.4: Overview of magazine interior looking towards west end entry. South wall is on the left.



19.5: Detail of south wall (16.2) showing window set within the section of wall that was cut away in 1899 for the windows. The top of the wall has been parged with cement mortar to provide a level surface for installing the window frames.



19.6: Detail of south wall (18.1) showing the crack discussed in the engineers's report that extends through the full thickness of the wall.



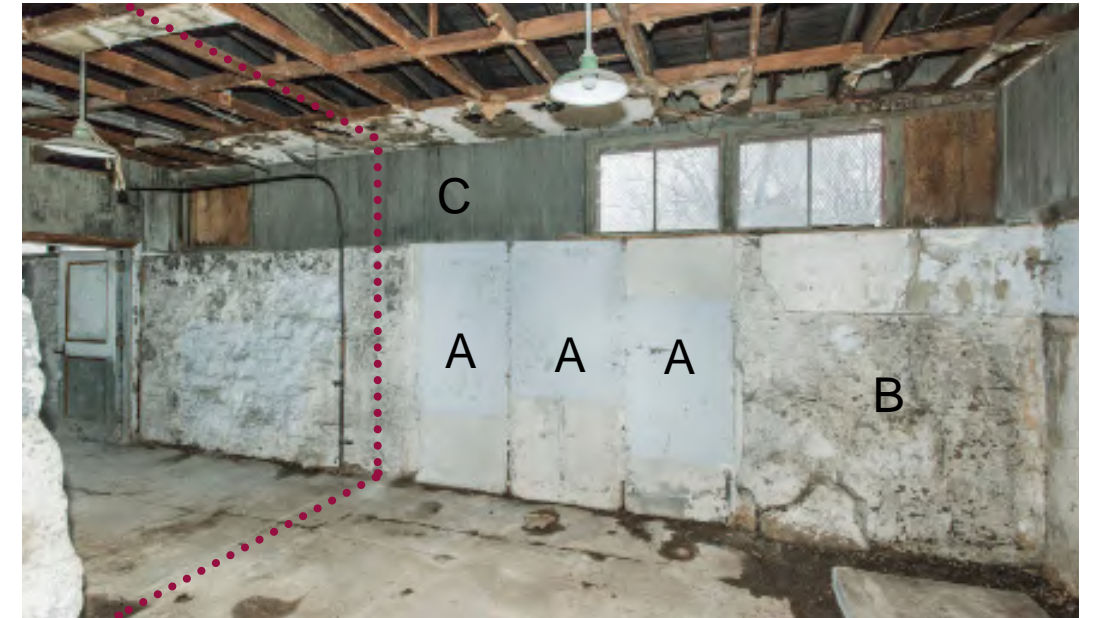
19.7: Jamb of east end entry with cast-in-place concrete installed in 1954 to make the cut-back wall smooth.



20.1: Overview looking east at partition installed in 1918 to separate the shower room. The matched boarding at "A" was added when the room was converted to an office, perhaps as early as 1940. The entry to the room was made narrower and a door added at that time. The cement platform at "B" was added after the urinal at this location was removed, probably c. 1940, to set a heating stove on.



20.2: The cement plaster was placed over the stone in 1918 to make this a shower room. The room was later made into an office, perhaps c. 1940. The windows were added in 1954.



20.3: North wall of 1899 addition. Cement plaster was applied over the stone in 1918 to install three toilet stalls at "A". A wide urinal trough was installed at "B". The matched boarding at "C" dates to 1918. It is painted above the fiberboard ceiling indicating that the ceiling is more recent. The 1918 plans call for a wall at the dotted red line to separate the toilet room from a storage closet on the left side of the line. The wall was apparently removed when the building was first converted to storage and administrative use, probably c. 1940, as it is not shown on the 1954 plans.



20.4: Overview looking east with the exterior face of the original 1818 north wall of the magazine on the left. The partition "A" was installed without the current door in 1918 to define the space beyond it for the storage of rental bathing suits and towels that was entered from the magazine. The boards at "B" were installed in 1918 to replace 1899 windows. The infill below "B" was built sometime after 1918 to fit the opening with a door. "C" marks the 1818 buttress that was partially rebuilt in 1899. The heating duct and lamps date to 1954. The fiberboard ceiling and its framing are likely 1954 or later. The cement floor dates to 1918. A sink was installed in 1918 below the plaster on the wall at "D".

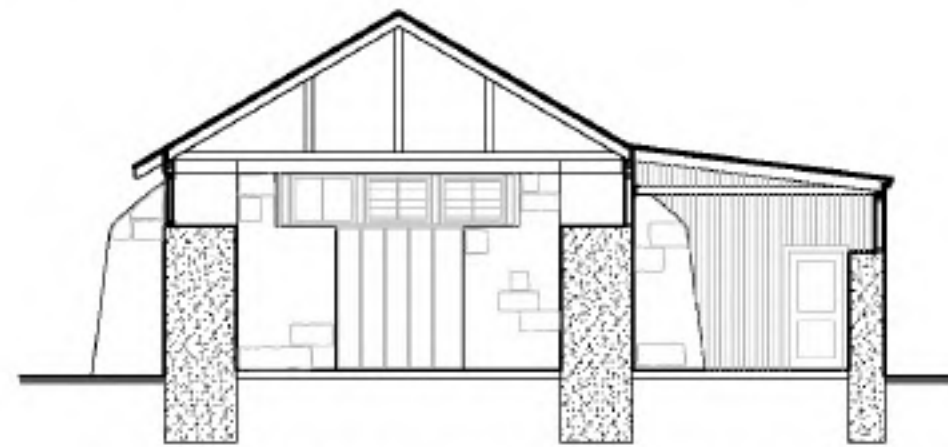


20.5: Current utility room at the east end of the 1899 addition, looking at the other side of the matched board wall marked "A" in 18.4. The kalemene (metal-clad) door was installed in 1954 when the current furnace and ductwork were installed.



20.6: Current utility room looking toward the east end wall of the 1899 addition. The partition around the toilet was installed in 1954 along with the furnace and the plaster ceiling. The cement block wall at "A" was also installed in 1954 to infill the opening cut in 1918 in the north wall of the magazine to separate the utility room from the magazine space. As the furnace is over 50 years old, it is obsolete and should be removed along with its duct work. The plumbing and electrical systems also date to 1954. They have probably been damaged by the chronic dampness in the building. They are considered obsolete and should be completely removed. The design and installation of new mechanical and electrical systems should be based on the needs of the eventual reuse of the building.

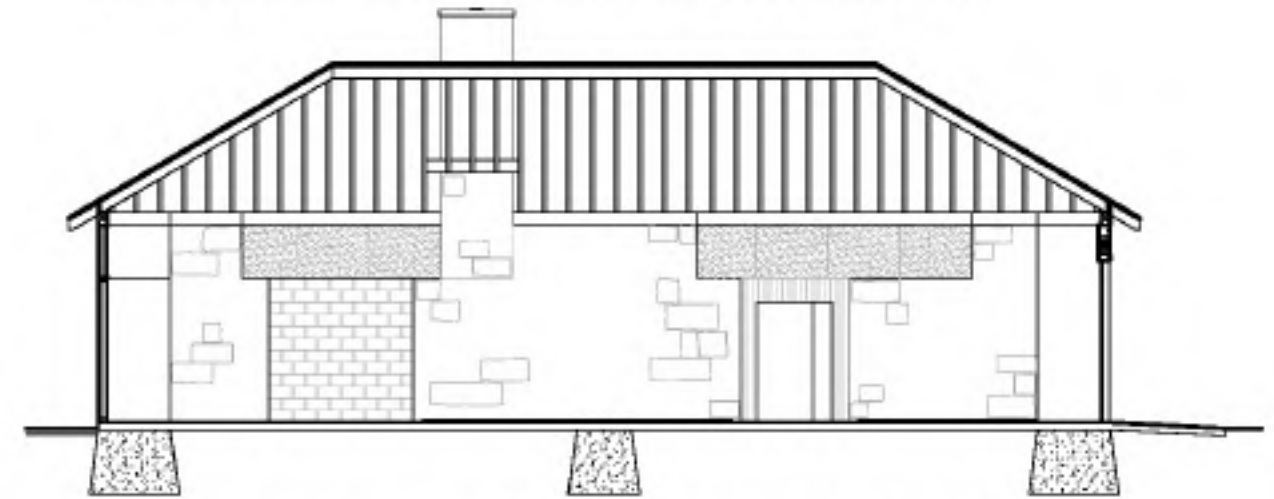
CROSS SECTION THROUGH DOOR INTO 1900 ADDITION



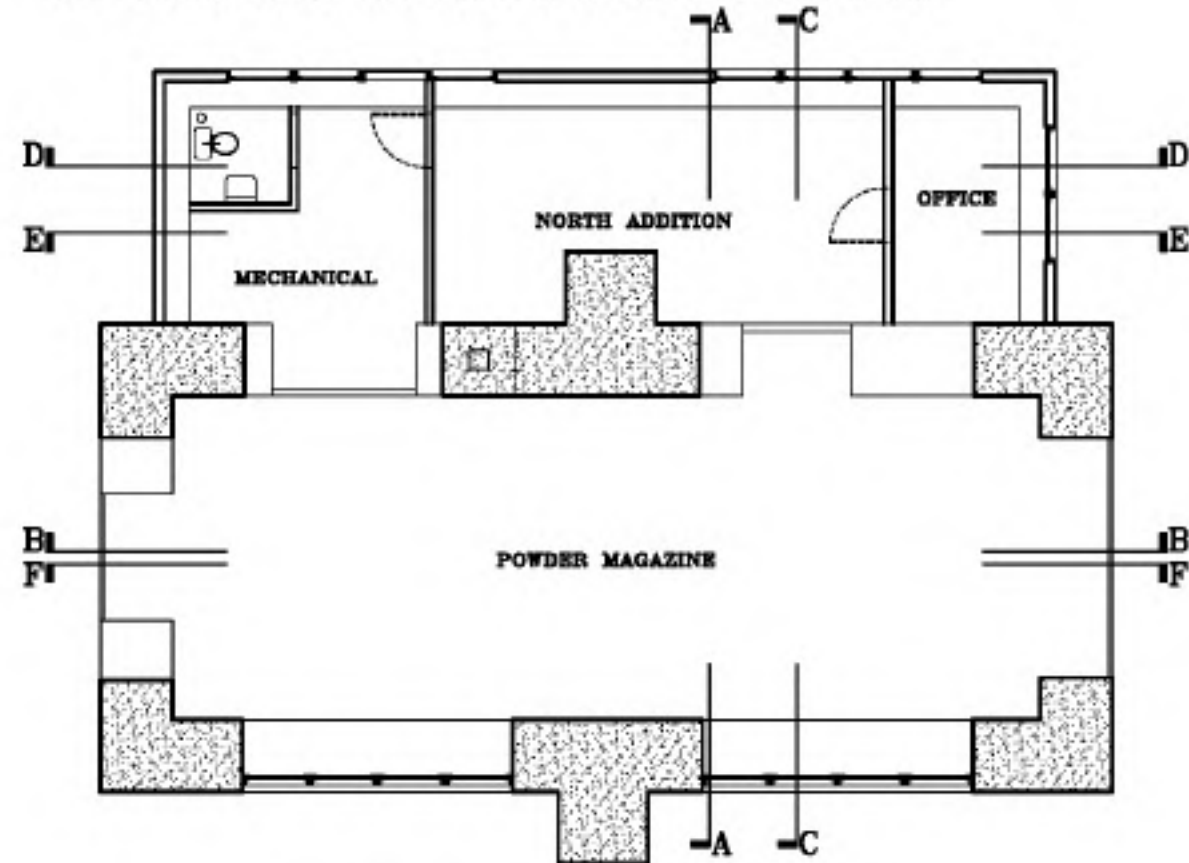
AA-CROSS SECTION THROUGH ENTIRE BUILDING



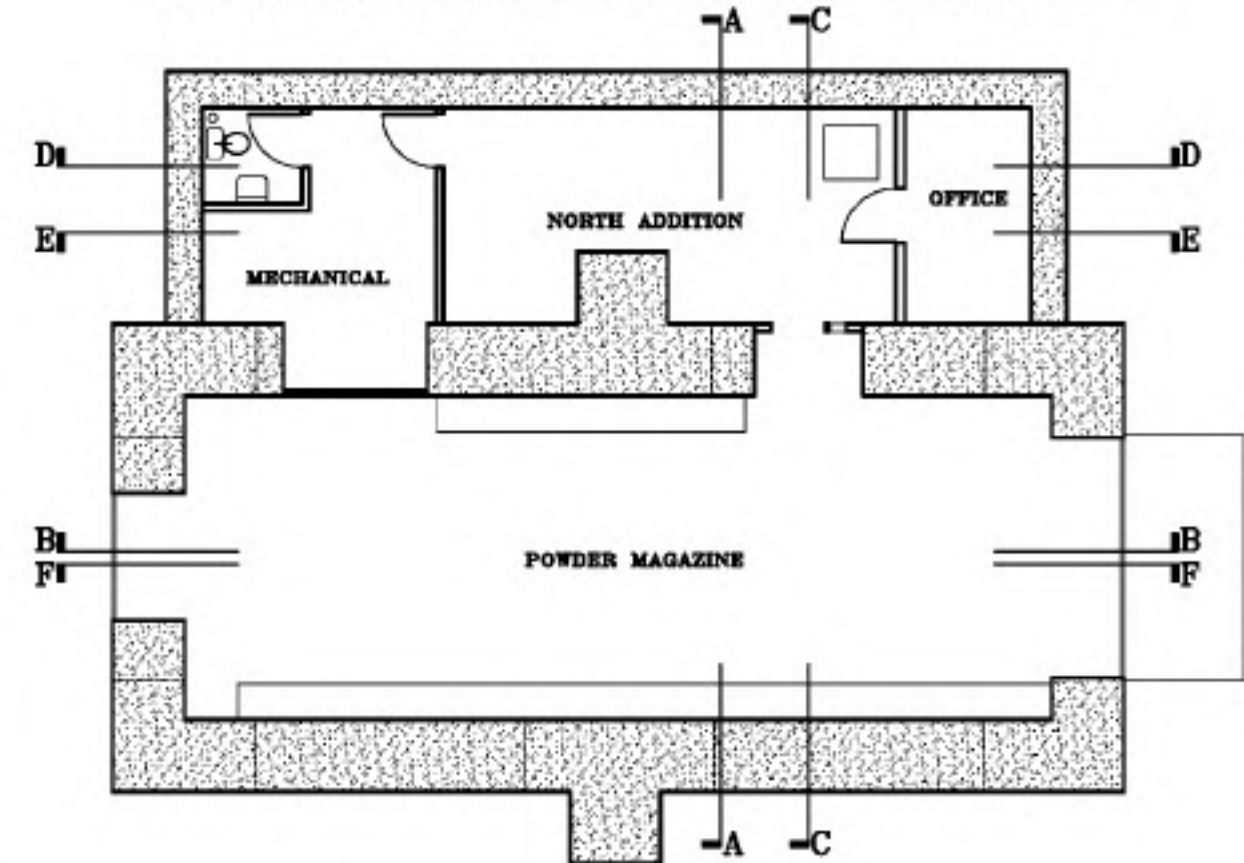
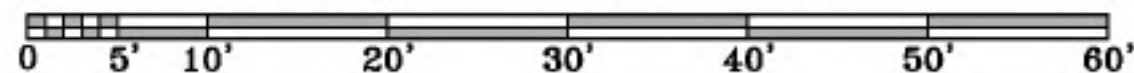
LONGITUDINAL SECTION THROUGH 1900 ADDITION



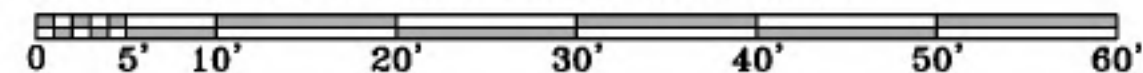
BB-LONGITUDINAL SECTION THROUGH 1818 BUILDING

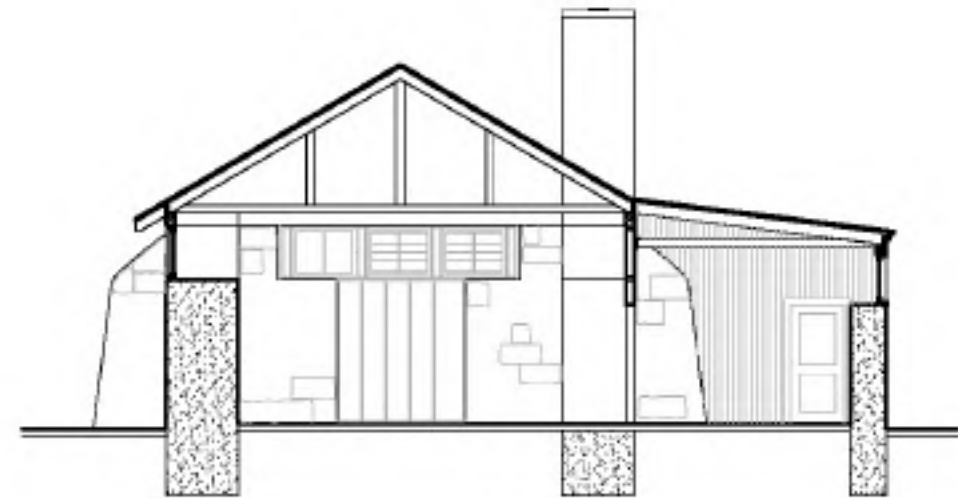


FLOOR PLAN @ 9' ABOVE FLOOR

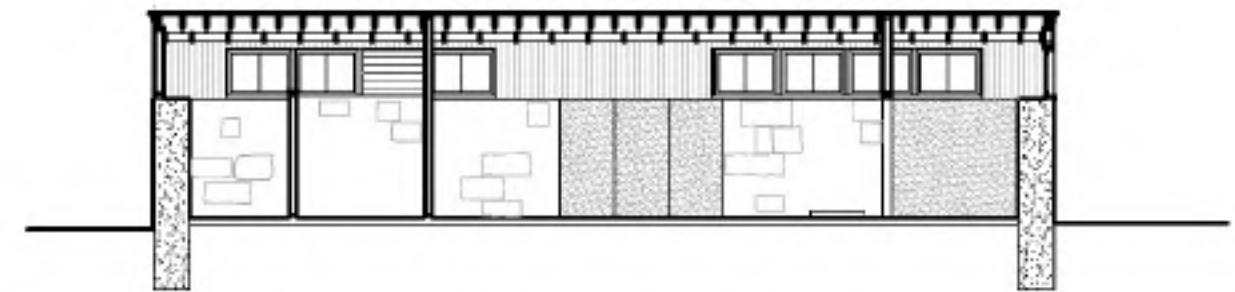
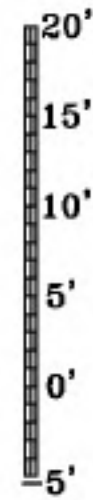


FLOOR PLAN @ 3' ABOVE FLOOR

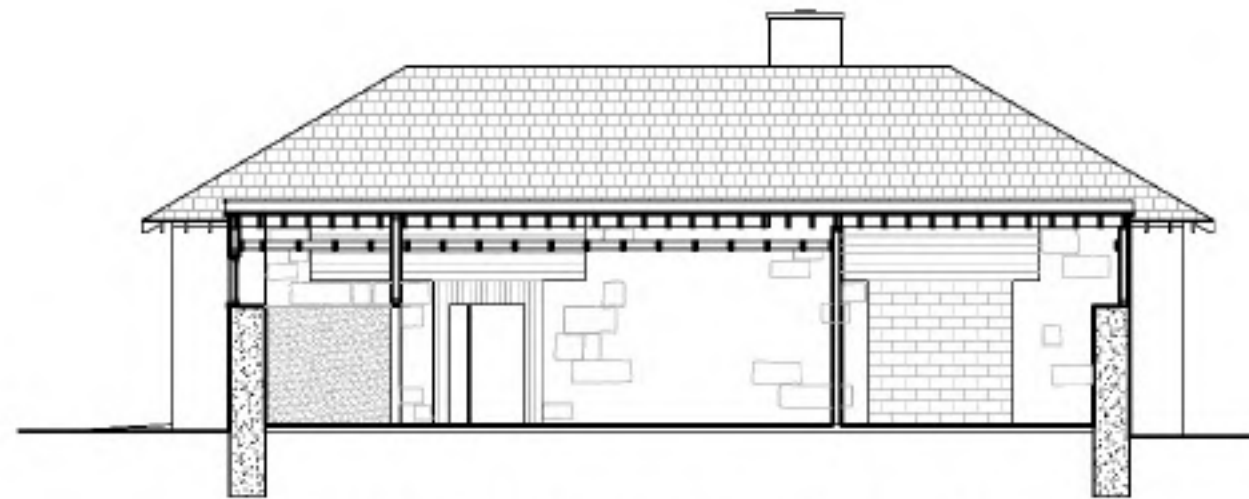




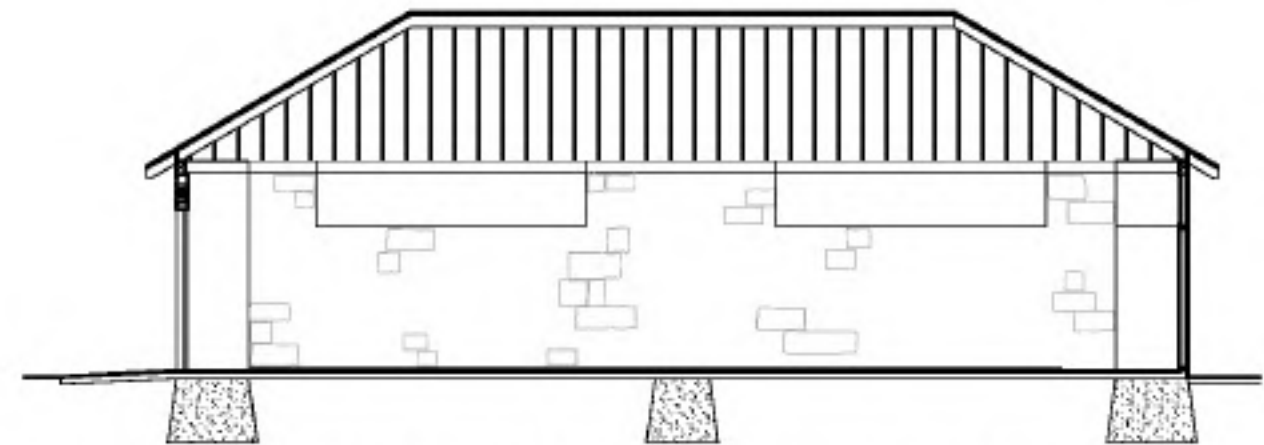
CC-CROSS SECTION THROUGH DOOR INTO 1900 ADDITION



DD-LONGITUDINAL SECTION THROUGH 1900 ADDITION



EE-LONGITUDINAL SECTION THROUGH 1900 ADDITION



FF-LONGITUDINAL SECTION THROUGH 1818 BUILDING

ILLUSTRATION CREDITS

Figures 1.1, 1.2, 1.3, 1.4: Leventhal Map Center, Boston Public Library (downloaded images):
1.1 & 1.2 - *A plan of Boston in New England with its environs by Henry Pelham, 1777*, <http://maps.bpl.org/id/m8626>. **1.3** - *A new plan of ye great town of Boston in New England in America, with the many additional buildings & new streets to the year 1743* by William Price, 1743, Call # G3764.B6 1743 .P7., <http://maps.bpl.org/id/10913>. **1.4** - *Map of the Town of Roxbury* by John Groves Hales, <http://maps.bpl.org/id/11124>.

Figure 2.1: Cambridge Historical Commission: Detail of Plan for Cambridgeport Parish, by Peter Tufts, Jr., 1824.

Figure 2.2: Cambridge Historical Commission: United States Coast Survey, "Boston Harbor, Massachusetts," 1857 (detail; based on surveys made in 1847).

Figure 2.3: Cambridge Historical Commission: G.M. Hopkins & Co., Atlas of the City of Cambridge, Mass. Philadelphia, 1886 (detail).

Figure 2.4: Leventhal Map Center, Boston Public Library (downloaded images):
2.4 - Boston Harbor Mass., *Charles River from Brookline Street bridge to Market Street bridge* by the United States Harbor Line Board of 1888, U.S. Engineer's Office, 1890, Call # G3762.B65 1890.2 .U5, <http://maps.bpl.org/id/12689>.

Figure 2.5: Cambridge Historical Commission: John G. Hales. "Plan of Cambridge from Survey Taken in June 1830" (detail).

Figure 3.1: Sept. 24, Oct. 1 and 8, 1817. *Columbian Centinel*, issue 3492, p. 2; America's Historical Newspaper Database, Series 1-9, <http://www.iw.newsbank.com>.

Figure 3.2: Cambridge Department of Public Works: "Measurement of Magazine and House on Pearl & Chestnut Sts." Field Book 4, p. 38 (September 23, 1873).

Figure 3.3: Drawing by William Finch, Finch & Rose, Beverly, MA.

Figure 3.4: Photograph by Nina Cohen of entry in *Quarter Master General's Cash Books*, National Guard Museum & Archives, Worcester, Massachusetts: Letter Books, Quarter Master General's Department.

Figure 4.1: Photograph by Scott Baltjes posted on Flickr (downloaded image); <http://www.flickr.com/photos/sparechange63/6214283101/>.

Figure 4.2: Photograph provided by Tom Desjardin, Historian, Division of Parks and Public Lands, State of Maine.

Figure 4.3: Downloaded from: <http://www.uskidd.com/battles-secession.html>. Louisiana's Military Heritage.

Figure 4.5: Downloaded from Internet, source unknown.

Figure 4.6: Provided by Roger Sherman, Admirals Hill Office Suites, current owner of the magazine. Information on this magazine and the Watertown Arsenal Magazine provided by Sara E. Wermiel, PhD.

Figures 4.7, 4.8: Photographs by William Finch, Finch & Rose, Beverly, MA.

Figure 5.1: Peabody Essex Museum Phillips Library.

Figures 5.2, 5.3, 5.5, 5.6: Historic American Building Survey, Library of Congress (downloaded images). 5.2-U.S. Arsenal, Reisterstown Road, Pikesville, Baltimore County, MD, <http://hdl.loc.gov/loc.pnp/hhh.md0488/photos.085659p,Photo#HABSMD,3-PIKV,1--19.5.5&5.6>-U.S. Arsenal, Reisterstown Road, Pikesville, Baltimore County, MD, details from HABSMD,3-PIKV,1-(sheet 14 of 14); <http://hdl.loc.gov/loc.pnp/hhh.md0488/sheet.00014a5.5-55>. POWDER MAGAZINE, VIEW FROM SOUTHWEST REAR TONORTHEAST FRONT OF THE CHAMBERS SHOWING BARRED WINDOW SLITS THAT PROVIDE AIR CIRCULATION. NOTE PASSAGE TO ADJOINING MAGAZINE TO LEFT, INSIDE SECURABLE ENTRANCE.-Fort Monroe, Fortress, Hampton, VA, HABSVA,28-HAMP,2D--55, <http://www.loc.gov/pictures/collection/hh/item/va1665.photos.040091p/>.

Figure 5.4: Detail of sheet titled "Plan and Sections of Fort Pickering, Salem Mass, 1864": # RG 77 Dr 18 Sh 30, National Archives and Records Administration, Washington, D.C.

Figures 5.7, 5.8, 5.9: Photographs by William Finch, Finch & Rose, Beverly, MA.

Figure 6.1: Thomas W. Rivers, "Magazine Beach—50 Years Ago and Today," *Boston Sunday Post*, May 20, 1923. Cambridge Historical Commission Archives, Magazine Beach file.

Figure 6.2: Cambridge Historical Society Archives, Old Cambridge Photographic Club Collection, # 1.09 OCP.

Figure 6.3: Cambridge Public Library.

Figure 7.1: Leventhal Map Center, Boston Public Library (downloaded image); *Sketch plan showing the existing and proposed public reservations upon the banks of the Charles between Waltham line and Craigie Bridge by Olmstead, Olmstead & Eliot, Massachusetts, Metropolitan Park Commission, 1894, Call # G3762.C5 1894 .S5, <http://maps.bpl.org/id/10699>.*

Figures 7.2, 7.3: "A Municipal Bathing Beach," *Cambridge Chronicle*, June 3, 1899, Real Estate and Building Section. Historic Cambridge Newspapers online.

Figures 7.4, 7.7: "Bathing Beach on Captain's Island," *Cambridge Chronicle*, July 15, 1899, p.3. Historic Cambridge Newspapers online.

Figures 7.5, 7.6: Massachusetts Department of Conservation and Recreation: Photographs, plans; copied from plans at the Olmsted National Historic Site.

Figures 8.1, 8.2: Cambridge Historical Commission.

Figure 8.3: Cambridge Historical Commission, Cambridge Park Dept. Annual Report of 1900.

Figures 8.4, 8.5, 8.6: Cambridge Historical Commission, Cambridge Park Dept. Annual Report of 1901.

Figure 8.7: Massachusetts Department of Conservation and Recreation Archives.

Figures 9.1, 9.2: Massachusetts State Archives, Dorchester, Massachusetts.

Figures 9.3, 9.4, 9.6: Massachusetts Department of Conservation and Recreation Archives.

Figure 9.5: Cambridge Historical Commission.

Figure 9.7: Photographs by William Finch, Finch & Rose, Beverly, MA.

Figures 10.1 - 10.8: Sheet #3 of 1918 plans for new Bath House by Charles R. Greco, Architect, Massachusetts State Archives, Dorchester, Massachusetts (original blueprint photographed and converted to black line by William Finch).

Figures 11.1, 12.1: Massachusetts Department of Conservation and Recreation Archives.

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APPENDIX



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6. Article from the *Cambridge Chronicle*, June 3, 1899 describing the proposed renovation of the powder house into a bath house. (1 page)
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8. Structural Report, Structures North, 2013

MAESTOSO, or MAESTROSO, in the Italian music, signifies to play with grandeur; flow, but yet with strength and firmness.

MAGAZINE, in the military art, a place in fortified towns, where all sorts of stores are kept; and where carpenters, wheelwrights, smiths, &c. are employed in making things needful to furnish out the train of artillery.

MAGAZINE, *powder*, is a building constructed for keeping large quantities of powder. These *magazines* were formerly towers erected in the town walls; but many inconveniences attending this situation of them, they are now placed in different parts of the town. They were at first constructed with Gothic arches; but M. Vauban, finding these too weak, constructed them in a semicircular form of the following dimensions, viz. sixty feet long within, and twenty-five broad; the foundations eight or nine feet thick; and eight feet high from the foundation to the spring of the arch; the floor about two feet from the ground to prevent damp; and, consequently, six feet for the height of the story.

The thinnest part or hanches of the arch is three feet thick, and the arch made of four lesser ones, one over the other, and the outside of the whole terminated in a slope to form the roof; from the highest part of the arch to the ridges is eight feet, which makes the angle somewhat greater than ninety degrees; the two wings, or gable

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ends, are four feet thick, raised somewhat higher than the roof, as is customary in other buildings; as to their foundations, they are five feet thick, and as deep as the nature of the ground requires.

MAGAZINE, *artillery*, or the *magazine* to a field battery, is usually made about fifty or sixty yards behind the platform. This is a cavity dug in the ground about four feet deep, and the earth thrown between the pit and the platform; the sides of the pit are sometimes planked round to keep it dry, and to prevent the earth from crumbling in; and the powder-barrels placed here are covered with hurdles and earth, or tanned hides, to preserve the powder from wet or fire. The communication to the *magazine* is by a sloping trench beginning to descend about five or six yards behind the platform; and the earth is thrown on that side where it will most conveniently cover the persons who remove the barrels of powder from the great *magazine* to the *battery*, or *small magazine*.

MAGAZINE, or POWDER-ROOM, in a ship, a close room or store-house built in the fore, or after part of a ship's hold, to contain the gunpowder used in battle, &c. This apartment is strongly secured against fire, and no person is suffered to enter it with a lamp or candle; it is therefore lighted, as occasion requires, by means of the candles or lamps which are fixed in the *LIGHT-ROOM* contiguous to it.

Entry describing powder magazines in a **Dictionary of Arts and Sciences** by George Selby Howard, London, C. 1790.

del, is divided into several governments, independent of each other. Bombay commands the factories on the western side of the peninsula, commonly called the Malabar coast; together with those in Guzerat; the establishments and possessions on the eastern or Coromandel coast, are under the government of Madras; and those in Bengal depend on Calcutta.

MADRIERS, are long planks of broad wood, used for supporting the earth in mining, carrying one up, making coffers, caponiers, galleries, and various other purposes at a siege; also to cover the mouth of passages after they are loaded, and are fixed with the picards to the gates or other places designed to be forced open. When the planks are not strong enough, they are doubled with plates of iron.

MAGAZIN, *Fr. magazine*.

Port-Magazine, *Fr.* This was a sort of intermediate building, called entrepot, where stores, provisions, &c. to answer daily consumptions were deposited.

MAGAZIN d'approvisionnement, *Fr.* magazine of stores.

MAGAZIN d'artillerie, *Fr.* gunpowder magazines.

MAGAZINE, a place in which stores are kept, or arms, ammunition, provisions, &c. Every fortified town ought to be furnished with a large **magazine**, which should contain stores of all kinds, sufficient to enable the garrison and inhabitants to hold out a long siege, and in which smiths, carpenters, wheelwrights, bakers, &c. may be employed in making every thing belonging to the artillery, as carriages, waggon, &c.

Powder-Magazine, is that place where the **powder** is kept in very large quantities. Authors differ greatly both as to the situation and construction; but all agree, that they ought to be arched, and bomb-proof. In fortifications they are frequently placed in the rampart; but of late they have been built in different parts of the town. The first **powder** magazines were made with gothic arches; but M. Vauban, finding them too weak, constructed them in a semicircular form, whose dimensions are, 60 feet long, within; 25 broad; the foundations are eight or nine feet thick, and eight feet high from the foundation to the spring of the arch; the floor is 2 feet from the ground, which keeps it from dampness.

An engineer of great experience some time since, had observed, that after the centres of semicircular arches are struck, they settle at the crown and rise up at the haunches, even with a straight horizontal extrados, and still much more so in **powder** magazines, whose outside at top is formed like the roof of a house, by two inclined planes joining in an angle over the top of the arch, to give a proper descent to the rain, which effects are exactly what might be expected agreeable to the true theory of arches. Now, as this shrinking of the arches must be at-

tended with very ill consequences, by breaking the texture of the cement, after it has been in some degree dried, and also by opening the joints of the voussoirs, at one end, so a remedy is provided for this inconvenience, with regard to bridges, by the arch of equilibrium in Mr. Hutton's book on bridges; but as the ill effect is much greater in **powder** magazines, the same ingenious gentleman proposed to find an arch of equilibrium for them also, and to construct it when the span is 20 feet the pitch or height 10, (which are the same dimensions as the semicircle) the inclined exterior walls at top forming an angle of 113 degrees, and the height of their angular point above the top of the arch, equal to seven feet: this very curious question was answered in 1775 by the Rev. Mr. Wildbore, to be found in Mr. Hutton's *Military Mathematics*.

Artillery-Magazines, in a ship, the **magazine** is made about 25 or 30 yards behind the battery, towards the parallel, and at least 3 feet under ground, to hold the **powder**, loaded shells, port-fires, &c. Its sides and roof must be well secured with boards to prevent the earth from falling in: a door is made to it, and a double trench or passage is sunk from the **magazine** to the battery, one to go in and the other to come out at, to prevent confusion. Sometimes traverses are made in the passages to prevent direct shot from plunging into them.

MAGAZINES. The present practice is not to make large **powder** magazines for batteries, but to dispense the barrels of **powder**, or cartridges here and there in small magazines, about 6 or 7 fathoms, in the rear of the battery; as it appears better to lose a small quantity from time to time, than to run the risk of the whole being destroyed, by a single shell falling into the **magazine**. These small magazines or entrenchments, will hold about one or two tons of **powder**, and take about eight or 9 feet square. They ought to be well covered from the fire of the place, and always in the rear of one of the batteries. When they cannot be sunk in the ground, they should be secured by sand bags or gabions. They should be made with attention, as should the communication from them to the battery. Two magazines of this kind will be required for a battery of six pieces.

Permanent powder magazines. According to Vauban's plan, **powder** magazines are commonly made 10 fathoms long, and 25 feet wide, in the clear. The foundation of the longest sides, is 9 or 10 feet thick, and 6 feet or more deep, according to the nature of the ground. The side walls raised upon these are 3 or 5 feet thick; and if there is not to be an upper story, 3 feet will be sufficient height above the foundation. By this means the flooring may be raised above the ground, free from damp, and there will remain 6 feet from the floor to the spring of the

arch. The arch is formed of layers of bricks, arched one over the other, and ought to be 3 feet thick at the top. The exterior surface of the arch terminates with an angle at top, like a roof; which angle must be of such magnitude as to make a thickness of 3 feet over the key stone of the arch. The foundation at the gable ends is 3 feet thick, and the same depth as the sides; these ends are built up 4 feet thick, from the foundation to the top of the roof. The long sides are supported by counterforts, 6 feet thick and 4 feet long; and placed 12 feet asunder. The ventilators are placed, one in the centre of each space between the counterforts, and are made with a diameter of 1-2 feet. These ventilators are also closed with plates of iron. The **magazine** is lighted by a window in each end, high up, which are opened and shut by means of a ladder. These windows are secured, each by two shutters, made of plank 2 or 3 inches thick; and the outer one covered with sheet iron, and both fastened with strong bolts. The entrance to the **magazine** is closed by two doors, one of which opens inwards, and the other outwards; the outward one is covered with sheet iron. The entrance of the **magazine** should, if possible, be placed towards the south. A wall of 1-2 feet thick, and 10 feet high, is built round the **magazine** at 12 feet distance. A **magazine** of the above dimensions will contain about 94,800 lbs. of **powder**, in piles of 3 barrels each; for a greater number piled above each other destroy the barrels, damages the **powder**, and occasions accidents.

MAGNITUDE, or quantity, any thing

Entry describing powder magazines in **A Military Dictionary**, William Duane, Philadelphia, 1810.

CAPTAIN'S ISLAND POWDER MAGAZINE BUILDING EXPENSES

A number of the actual bills for work done on the powder magazine were discovered at the National Guard Museum & Archives after completion of the Historic Structure Report (Report). These bills support and add to the Report's conjectures about the magazine's appearance. They also offer a fuller picture of how Captain's Island was developed into the site of a powder magazine.

Following is a short summary of the bills dating from 1818. Details of some have been included in the listing of building expenses below, which have been culled from the Quarter Master General's Cash Book (Cash Book). (The Cash Book entry numbers correspond to numbered bills that are located in a separate file). These do not comprise a complete record, however, as some of the work on the island and magazine was performed in 1817 and 1819, and bills for those years are missing. Moreover, at least one of the bills that list work done may actually refer to the outbuildings on Captains Island, making a more precise description difficult.

The bills confirm that a wooden floor was laid down in the magazine, and that spruce and probably some pine were used in the building. The floor was covered by two floor cloths, one of which was made of a kind of canvas duck; each was painted on both sides. Whiting was applied to the walls inside and out, but there is no mention of wooden walls.

Stone was laid under the magazine's wooden floor and put beneath its lightning poles. As depicted in the Report's diagram, the magazine's wall had a gate. Although its appearance is not known, the gate was supported by stone posts and had copper rivets and composition hooks and hinges. In addition to the stone provided for the magazine by Bryant & Newcomb of Braintree, B & R Adams of Boston supplied stone coping, the top layer of wall stone. The bill details for setting glass confirm that the magazine had glass windows, but not how many or where.

The bills also confirm that copper – as recounted in a newspaper article – was used for making nails as well as other hardware for the magazine, including the hinges for shutters and four ventilators. As mentioned above, some of the magazine's hardware was also made of "composition." This was presumably of iron, as the Cash Book's entry for the particular bill specifies copper and iron work, while the bill itself itemizes copper and composition. Also listed are two electrical rods with silver-tipped steel points that were put up with staples.

The lawyer's bill for obtaining the land for the road to the magazine reveals that referees were hired to "settle the question of damages" in connection with it. As surmised in the Report, bills indicate that timber was rafted and both hauled by a team and carted to the magazine. The bills also augment the Report's information about the daily wages that laborers earned as well as lawyers' and military personnel's fees. The Cash Book notes that QMG Amasa Davis earned a yearly salary ranging from \$1,500 to about \$1,700, and earned fees for additional duties.

Further research in the archives' "Magazine Returns" – the State's annual inspection records of each town's ammunition – shows that communal supplies of arms and powder were kept in an even greater variety of places, including corn houses, barns, and gun, cider and chaise houses.

In addition to the itemized bills, a few more small entries in the Cash Book were found for the same

contractors, increasing the cost of the powder magazine by \$268.24 to about \$11,288. This sum includes the land, outbuildings, pump, and wall surrounding the magazine. The amounts for each can be approximated from the following list.

CAPTAIN'S ISLAND POWDER MAGAZINE EXPENSES 1817-1819.

Aug. 15, 1817	
102. For Cash paid Joseph Shed bill of lumber for Wharf at Captains Island	39.28
Aug. 21, 1817	
105. For Cash paid Josiah Mason & Son plank delivered Tenny for Road to Capt. Island	33.18
Aug. 22, 1817	
107. For Cash paid John H. Wheeler framing Flag-staff for Magazine	57.59
Sept. 1, 1817	
117. Cash paid Jonas Pierce for strip of land for making road over the marsh to Captains Island	150.00
Sept. 16, 1817	
119. For cash paid William Riley digging (sic) trench for Wharf at Captains Island	112.50
Sept. 18, 1817	
121. For Cash paid Jonah Tenny making road over the marsh to Captains Island Cambridge	567.50
October 14, 1817	
130. For Cash paid William Riley work done at Captains Island Cambridge	136.50
October 22, 1817	
134. For Cash paid Henry Fowle & Son bill of Pump & setting at Captains Island Cambridge	41.23
October 22, 1817	
135. For Cash paid Samuel S. Wheeler work at Captains Island Cambridge	225.50
October 23, 1817	
136. Cash paid Richard H. Dana for Captains Island Cambridge	650.00

October 28, 1817	
137. For Cash paid Williams & Preston sundries dld. Riley for work at Captains Island	8.72
November 5, 1817	
143. For Cash paid Jonah Tenney digging well, & other work on Captains Island	337.00
November 7, 1817	
145. Cash paid Samuel Bartlet recording Deeds of Captains Island & Marsh	2.50
November, 1817	
154. For Cash paid Joseph Shed bill of lumber delivered SS Wheeler for wharf & etc. Captains Island	205.43
December 6, 1817	
158. For Cash paid Peter Tufts Jr surveying and laying out work Captains Island	20.27
December 16, 1817	
163. For Cash paid Bryant & Jonathan Newcomb building wall for wharf Capt. Island	315.20
January 3, 1818	
179. For Cash paid Josiah Mason & Son lumber dl'd at Powder Magazine Captains Island Cambridge	28.74
January 1818	
184. For Cash paid Samuel S. Wheeler bill of lumber for Powder Magazine	77.44
January 14, 1818	
187. For Cash paid Worthington & Shed for lumber del'd Samuel S. Wheeler for Powder Mage. (sic.)	293.11
January 23, 1818	
200. For Cash paid Samuel F. Sawyer on account of Contract for building Powder Magazine Captains Island Cambridge	1000.00
January 30, 1818	
208. For Cash paid Chas Davis drawing & examining Deeds of land bought in Cambridge	24.75
February 17, 1818	
3. For Cash paid Ballard & Wright advertising proposals	3.00

for building Powder Magazine on Captains Island Cambridge

April 22, 1818

23. For Cash paid Jon(n) & Bryant Newcomb Samuel F. Sawyer order for amount of stones delivered at the Powder Magazine Captains Island Cambridge	750.00
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May 11, 1818

29. For Cash paid Sam S. Wheeler repairing Boat & copper for Powder Magazine (4.00 boat repair, 5.00 copper, 9.00 total)	5.00
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May 15, 1818

31. For Cash paid Joseph Shed for lumber dl'd. for Powder Magazine Captains Island	42.12
- "To 182 feet Spruce Joist"	
- "...88 feet Spruce Timber"	
- "Carting Timber from Thayers to Wheelers"	

July 8, 1818

61. For Cash paid Samuel F. Sawyer on acct of Contract for building Powder Magazine Captains Island	800.00
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August 21, 1818

77. For Cash paid Joseph Shed bill of lumber dld. SS Wheeler for Powder Magazine Captains Island Cambridge	90.81
- "To Carting Copper from Reveres to Wheelers Shop"	
- "...Carting Copper from Reveres to Cobbs Shop"	

September 21, 1818

87. For Cash paid Saml F. Sawyer on acct of Contract for building Powder Mag Captains Island	500.00
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September 24, 1818

90. For Cash paid Samuel Cutter for refreshmts had by on Palmers road to Captains Island Cambridge	2.00
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September 26, 1818

92. For Cash paid Elias Cobb bill of iron & Copper work for Powder Magazine Captains Island Cambridge	175.22
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October 2, 1818

95. For Cash paid Jonah Tenney labor at Captains Island making road & etc.	454.16
- "34 days labor myself ... @ 2.50"	
- "17 days labor Mr. Weed @ 2.00"	
- "108 days labor my man @ 1.50"	
- "...for team 4 ½ days @ 6.00"	

- "...for ploughing road, 2.00"
- "...for hand carts on road, 2.50"

October 9, 1818

100. For Cash paid Saml PP Fay procuring & executing deed of road to Captains Island Cambridge 30.00

October 15, 1818

102. For Cash paid John Palmer amount of award of damages for right to make a road thro' his land leading to Captains Island 115.00

October 17, 1818

104. For Cash paid Saml S. Wheeler Carpenter's work on Powder Magazine Captains Island Cambridge 568.06

October 19, 1818

106. For Cash paid Samuel F. Sawyer Balance of account for building Powder Magazine, and wall around it on Captains Island Cambridge 2450.75

- "Whiting Magazine inside & outside 18.00"
- "6 Perch stone underpinning floor timbers 30.00"
- Wall enclosing Magazine
- "57 ½ perch trench stone @ 3.25"
- "69 ¼ perch above the trench @ 5"
- "41,000 bricks and laying 11.50" (per thousand)
- "296 ½ feet coping stones .68"

October 21, 1818

107 For Cash paid Joseph Jones & Co makg Carpet for Powder Magazine on Captains Island Cambridge 48.40

October 29, 1818

109. For Cash paid John Cotton painting Carpet for Captains Island Powder Magazine 46.50

October 30, 1818

116. For Cash paid Paul Revere & Son Copper for Powder Magazine 163.75

November 30, 1818

124. For Cash paid Josiah Mason & Son for timber and plank dld Wheeler for Powder Magazine Captains Island 13.99

- "To 168 feet spruce timber..."
- "321 feet pine plank..."

December 30, 1818	
134. For Cash paid Worthington & Shed bill of lumber& etc.(?) for Powder Magazine Captains Island	148.78
January 9, 1819	
138. For Cash paid Saml S. Wheeler Carpenters work at Powder Magazine Captains Island	118.50
January 22, 1819	
156. For Cash paid John Green Jr setting glass at Powder Magazine Captains Island	10.00
- "For setting 60 lights 8 x 10 glass and setting for the Powder mag."	
January 27, 1819	
170. For Cash paid Amasa Davis superintending Building Powder Magazine & etc.	125.00
June 10, 1819	
25. For Cash paid Peter Tufts Jr for sundry tools & etc. purchased for the Powder Magazine Captains Island Cambridge	22.17
June 12, 1819	
28. For Cash paid Samuel F. Sawyer building small house and sundry other work on Captains Island Cambridge for Powder Magazine	189.20
July 24, 1819	
47. For Cash paid Saml. S. Wheeler work done at the Magazine Capts. Island	89.08

Dated and numbered entries from "Quarter Master General's Cash Book 1816-1820, pp. 30-72." National Guard Museum and Archives.

Line items from bills in "Early Militia Quartermaster General Amasa Davis Accounts Settled, 1818." National Guard Museum & Archives, Concord, MA (as of August 2013).

MAGAZINE BEACH - - - 50 YEARS AGO AND TODAY

The Old Powder House or “Magazine” From Which This Noted Street and the Beach Got Their Name

From the *Boston Sunday Post*, May 20, 1923

By Thomas W. Rivers (who lived Allston St. near Putnam; was 13 years old in 1880 – hand-written)

The battle so recently waged before the State Legislature, wherein the “Magazine Beach” at Cambridge played so prominent a part, recalls to the writer many reminiscences connected with the famous “old playground.”

The sketch which I have drawn is an exact copy of the original drawing made in the early ‘80s by the writer, and gives an excellent idea of the favorite Cambridge resort as it appeared at that time, and will no doubt be appreciated by the fathers and grandfathers of the present day kiddies who derive so much pleasure from bathing at this historic waterfront on the Charles.

Looking to the left across the river may be seen a part of the fence that surrounded old Beacon Park, where were held the greatest trotting races of that period.

The road seen in the foreground that winds its way by the old powder house or “magazine,” as it was often called, crossed a marsh land and connected with Magazine Street. It was this route that was sought by some people for the location of the new Cottage Farm bridge, to be erected in the near future, but by which the beautiful park and swimming beach across the Charles would have been obliterated for all time.

The Cottage Farm bridge may be seen in the distance looking toward the right. The new structure will now replace the old one on this exact location.

Home of the World-Famous Lens Expert

The house at the right used to be the home of Alvan Clark, the most famous manufacturer of lenses, perhaps, in the whole world at that time. His laboratory was in the rear. At present, I believe, the Ford automobile building stands in about the same location.

The magazine itself dated back to Revolutionary days, and schooners used to come up to the wharf in front bringing powder for storage.

Looking back over a stretch of years, this picture should awaken old memories in the boys of those days; for the “Magazine,” as it was generally termed at that period, was the favorite playground and bathing place for boys from miles around, but those living in the immediate neighborhood seemed to regard it as their own property, and frequently would defend their rights against invaders. This often resulted in pitched battles between Cambridgeport and Lowerport boys, but needless to say the home talent were usually returned victors.

The pine grove that banked each side of the road formed a beautiful setting for the quaint old pow-

der house that was a landmark on the river front for so many years.

It was the good fortune of the writer, with other small boys, to be present the day that the great iron-bound door in the wall was forced open – what a moment that was – for that old door had for years withstood a constant bombardment from men and boys.

It had generally become the custom of bird hunters who frequented the grove in those days to amuse themselves before departing by firing a charge of buckshot into the big steel lock that seemed to defy all mortal efforts to complete its destruction, and thus, after withstanding a siege for several years, it finally succumbed, and on the eventful day before mentioned, the invading army, consisting of about a dozen boys, “rushed” the door. It fell with a crash, and hardly had it flattened the tall grass before we gained the entrance.

I can remember well the awe that possessed us as we looked about. Not a word was spoken for several seconds. I will here state that the extreme height of the wall crowned with sharp spikes, had the desired effect up to this time of keeping out all intruders, and the city of Cambridge, by whom the property was owned, showed not the slightest regard for the care of the “Old Place,” historic or otherwise. And so it was left to its own fate.

Boys Find Historic Relics

When we finally overcame our awe we began looking around, and many relics of days long past were found hidden in the grass – old flintlocks, sabres, etc., but, like Rip Van Winkle’s musket, these things actually fell apart when lifted from the ground, but, so far as the writer can recall, not one thing recovered was in a state of preservation.

As time wore on, the boys gradually became more venturesome in their daily investigations of the magazine, and it did not take long to disclose the fact that copper nails of a fine quality were used in its construction. Said “nails” bringing a good price as junk, created an incentive worthy of a better cause. An army of boys descended upon the “Old Place” and with the crude implements at hand no wrecking crew could have been more efficient, for in an amazingly short time the arched roof of the powder house, together with the floors and woodwork, were completely demolished, and not a copper nail was left.

Gradual decay now took possession of the place, the pine grove was not spared, as a great many of the trees were destroyed by fire. The city of Cambridge finally awoke to the fact that this “old place,” hallowed by the memories of Revolutionary days, should be preserved for the people, and the Magazine Beach of today, stands as a fitting memorial to its illustrious predecessor.

The little beach scene in the picture is where we obtained our first swimming lessons. We needed no teachers or life guards in those days, and it was considered a great accomplishment when you made your first dive off the stone wall. I remember when at low tide, we would swim across the river to “Sugarloaf,” and how we would extend mock sympathy to the younger boys who were unable to swim.

And the “Charles River,” the old tow boat that plied the river in those days, how when we heard her whistle to open the drawbridge, we would scamper to the “Old Maga,” to be the first one in to get the waves from the “tug,” how we dived for coins, thrown off the wall by Harvard students who frequently visited the place.

In conclusion I will say, I hope this picture, together with the few reminiscences I have written, will rekindle old memories, and lest we forget let us be ever grateful to those gentlemen who so valiantly waged the people's fight in the Legislature for the preservation of Magazine Beach.

Captain's Island

An Historic Spot Undergoing Great Changes.

On the east bank of the river Charles, and probably five miles from its mouth, is situated a tract of wooded land, a quarter of a mile in extent, famed in Indian legend and colonial history. It is within the limits of the city of Cambridge, a mile or two from Central square, and has for over two hundred years been styled Captain's Island, but is now commonly known as the "Magazine." The place is hardly a well-defined island, though it probably was at the time when it was first given its present name. Even now, a small stream ranging from a foot to ten feet in width flows entirely around it, but for many years a road has connected the place with the main land. Then, too, when September's tides are at their highest, the marsh is entirely submerged, and occasionally the road is under water. The land was granted to Captain Daniel Patrick in 1632, one of the first military commanders appointed by the colony, who resided at the southeast corner of Winthrop and Boylston streets. He served in the Pequod war, and was actively engaged in other places, until 1637, when he removed to Ipswich. The colony granted him this territory for military uses, because it was the only spot in this immediate vicinity visited by the Indians, who were at that time forced back further into the interior. Therefore, Captain Patrick always kept a strong watch on the island.

Tradition has it that this spot was a burial ground for the savages, and was respected and beloved by them, as is our own "Sweet Auburn" by us. Even when the natives were forced to retreat inland, pilgrimages were made regularly to the graves of their forefathers, where, on that hallowed ground, they kept watch over their dead, until the village folks became alarmed and showed signs of hostility. This practice was kept up until the district became settled, when the savages, fearful of results, failed to put in an appearance at the usual time. But a story has been handed down, and is now related by some of our oldest inhabitants, how in the year 1768, a band of ten Indians, peacefully inclined, floated down the Charles river, in the month of August, bent on some sacred mission. They were in search of a thickly wooded island, and told how they had spent much time in hunting for the river in which it was situated. They were directed to the island, the subject of this sketch, where by some secret signs they learned that this was the place of which they were in search. Here the band remained for two weeks. During this time the townsfolk were unable to catch a glimpse of any of their number. Late one evening, at the close of the second week, they were seen to take their departure in canoes, paddling up the river, and were never more heard of, neither was the secret of their errand ever learned. It is probable they were on a visit to the graves of their forefathers, a sacred custom with the Indians.

It appears that the place at that time was a thick wood, and an island, that is, entirely surrounded by water at all times. This is not hard to believe when one considers what changes might be wrought by nature in two or three hundred years. In 1635, or thereabouts, it served as a hiding place for Generals Goffe and Whalley, two English regicides fleeing from the vengeance of Charles II. These two

men at first found it convenient to hide in a cave which was at that time located at the junction of Bow street and Arrow, but it was too near the public thoroughfare, and on a dark night they were removed to Captain's Island. It is generally supposed that here General Washington planted a three-gun battery, at the siege of Boston, but as no mention is made in the histories of the fact, it is extremely doubtful. It is probable, however, that the battery at Fort Washington was supposed to be located here. Stone arrowheads and the tips of spears have been unearthed from time to time by boys.

From the time of the last visit of the Indians, up to fifty years ago, the place was seldom or never visited, and retained its natural state. About forty or forty-five years ago it was chosen for the site of a powder magazine, because of its isolation from the city. A wharf was built, about one hundred yards from the house, which was used for loading vessels with powder. The powder house was used until about twenty years ago. During all this time the place was rarely visited, and up to last year preserved many of its former attractions. To be sure, the number of trees was much lessened, only a few stunted bushes grew on the hill, and the grass was worn smooth from the constant passing of people, for the place has been a popular bathing resort for nearly fifteen years. It has also been quite popular for basket picnics and excursions, the tall pine and oak trees offering a cool and refreshing retreat from the summer sun. Up to seven years ago it was the property of the state, but at that time it was purchased by the late Charles E. Raymond and Mr. J. M. Hilton. Mr. Emersons Raymond of Broadway is now the owner.

On Tuesday a Tribune representative visited the island for the first time in three years, and it has indeed undergone a woful change. Its appearance was enough to cause a lover of the historic nooks of Cambridge to become indignant. Nearly the whole of the left side of the island has been cut away for the sand it contains. Only about a dozen stunted pine and oak trees are left out of three score or more which grew here last year. The other side is not quite so bad, yet it is fast becoming levelled to the marsh. The noble old oak trees, which at one time commanded the eastern side, have disappeared. The powder house has been torn down with the exception of the walls, which are still standing and in good condition. The house for the last dozen years has gradually become defaced by boys, but this year it has been nearly demolished. The building is 40 feet long by 25 feet wide. The walls are 4 feet thick and are constructed of granite on the outside and inside, with a layer of brick between. There are two rooms, divided by a granite wall two feet thick, with a door leading between. This door is but 2 feet wide by 6 high. There are no windows in the rooms, although there is a door at either

The high brick wall, which at one time entirely surrounded the place, has been torn down and the bricks used for building. It is expected that the granite walls will be taken down this year, and probably by another twelve-month or two every vestige of the "Magazine" will probably have disappeared.

Article in the October 4, 1890 *Cambridge Tribune* describing Captain's Island.

A MUNICIPAL BATHING BEACH.

Plans are now under consideration by the park commissioners for a municipal bath house to be built upon Captain's Island in the Charles river, nearly on a line with Magazine street. For this purpose the commissioners intend to use the old magazine now standing there as a basis for their operations.

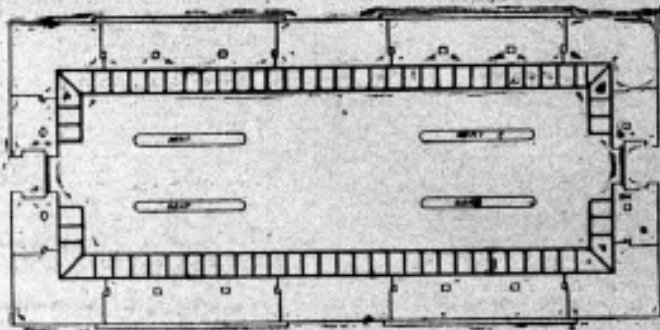
The accompanying sketches, received a few days ago from Olmsted Bros., the landscape architects, give in outline the idea according to which the building will

ing. There is plenty of available stone lying about this point to use for patching.

While as yet these plans have not been accepted by the park commissioners, the strong probability is that they will be approved soon, and that the entire work will be taken up in a short time. The new locker room and bathing beach may be expected to be finished from the first to the middle of July.

SALES BY C. E. HANCOCK.

C. E. Hancock has sold for Mary Porter the estate, No. 168 River street, opposite Jay street. It comprises 4350 square feet of land and includes a 14-story wooden house and a stable. The place is taxed for \$500. Daniel J. and Mary F. Silson are the purchasers. Mr. Hancock has also sold the house and 4450 feet of land at 26 Cottage street, for S. B. C.



INTERIOR OF PROPOSED BATH HOUSE ON CAPTAIN'S ISLAND.

be erected. The old magazine, a relic of Revolutionary days, stands upon a rise of ground about 300 feet from the beach. It is the intention to grade this ground about the old structure and also to carry the grading down to the water's edge. After the work now planned has been done, bathers will have a fine locker room near the water's edge, where they can leave their clothes and from which they can go very conveniently to the bathing beach. In the recent discussion as to establishing a new bath house and beach on this side of the river in the vicinity of Brookline street, it was found that the expense, about \$30,000, would be far too much for the city to assume at the present time, and the idea was given up in favor of the present arrangement.

A low cost, comparatively, is entailed in remodeling the magazine over for a locker room. The four stone walls now standing will be slightly repaired, and a few courses will be removed from the top. Then beams will be put on for a roof, and this will be shingled, the material to be the most inexpensive that can be obtained to answer the purpose. The house inside will have, probably, a concrete floor, and about 120 lockers will be arranged about the four sides. The interior dimensions will be 18 feet wide by

Feet. The ultimate purchaser is not known at present. This estate is taxed for \$1000.

CHattel MORTGAGES.

Filed at Registry of Deeds.

Quinlan, Ralph H., to Edgar R. Kimball, silk, & fix, 135 Cambridge st.	2,000
Herbst, Chas. W., to Jas. McIlhenny, horses, wagons, etc., 167 Pleasant st.	400
Withington, Henry, to Wm. T. Tupper, furn.	25
Powell, Mary G., to Union Loan Co., piano	150
Kremsky, Saml., to Wm. Phillips, silk, & fix, 120 Main st.	200
Flanagan, John, to Workingmen's Loan Assn., piano	35
Malach, Chas., to Lizzie Bennett, horses, wagons, silk, fix, etc., 67 Mass. ave.	500
Russell, Alden D., to Loring P. Russell, horses, wagons, silk, fix, etc., Tremont st.	800
Doye, Harry E., to Workingmen's Loan Assn., furn.	100
Dunn, Albt., to Gertie Rubinovitz, horse, wagon, etc., 57 Market st.	75

EASY PRET, CORNS, BUNIONS, CALLOUSES

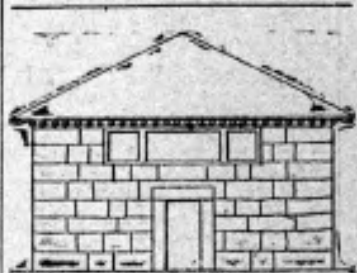
And ingrowing nails treated without pain at 373 Massachusetts avenue, room 4 Miss Nellie J. Henderson. Antiseptic washes used.

Meet me at Warren's and have a glass of soda.

.. THE ..
Gen'l Good CIGAR.

As Good as Imported. Try Them!

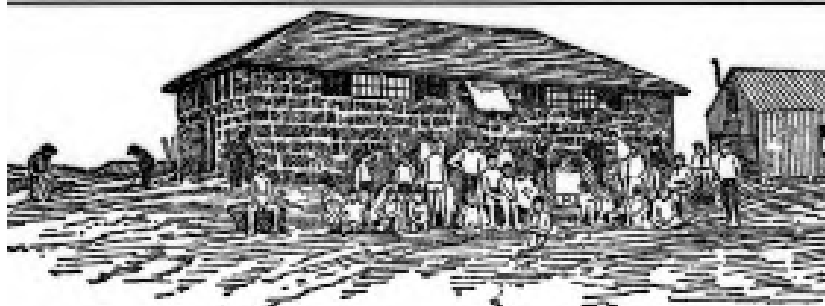
—SOLD BY—
GEORGE M. OLIVE
1863 Mass. Ave., North Cambridge.
GEORGE W. DOUGLASS,
327 Massachusetts Ave., Cambridgeport.



ENTRANCE TO BATH HOUSE.

48 feet long. The commissioners will probably start work on the grading next week. Several carpenters are now preparing bids for the construction of the roof and the lockers, which will be the chief part of the expense. The beach is a good one, and will show good results after the grad-

Newspaper article in *Cambridge Chronicle*, June 3, 1899, Real Estate and Building Section. Historic Cambridge Newspapers online.



BATHING BEACH ON CAPTAIN'S ISLAND.

**New Municipal Pleasure Resort
Opened Last Saturday—Old
Magazine Refitted as a Bath
House for Men and Boys.**

Bathing facilities of the most acceptable and permanent order have been established at Captain's island, in the new municipal bathing beach and bath house just opened for use by the city authorities.

Last Saturday morning the new house, the beach and the grounds surrounding it were inspected by several interested persons who bestowed great praise on the successful completion of a worthy project. There were no formal exercises, but Chairman George Howland Cox, of the Cambridge park commission, and Superintendent of Parks Howard E. Whiting were on hand to answer any questions that the visitors wished to ask them.

Captain's island is located in the Charles river at the foot of Magazine street. Formerly it was an island in fact as well as in name, but at the present time it appears as a part of the main land, the space between it and the latter having been long ago completely filled in. At this point there was a fine opportunity for the construction of a bathing beach, and this was done some time ago by the park commission. The beach is really a part of the chain of the river parkway along the river. This beach is the first of its kind in Cambridge, and in the discussion concerning it has created a widespread public interest. It is located opposite the Cottage Farm district of Boston. Pearl street electric cars will leave passengers within a short distance of the beach.

The old magazine, which is supposed to have been built by the British in Revolutionary times, has been made into a locker house. The middle wall of stone was removed, leaving a clear sweep inside the four walls of the building for the use of bathers. Here there are 124 large lockers and a number of seats in the centre of the room to be used by the bathers before or after going into the water. A new roof has been added to the structure, with an open space beneath it for ventilation purposes. The old gray walls of the magazine have been refreshed in places, and the old mace at one side of it has been built up to a height corresponding to the other walls. Here a large number of tools and other implements can be kept from time to time as the park commission may need them in its work about the beach. The interior finish and the floor is of hard pine, while the lockers are made of the same material. At the front of the building there is a small space partitioned off and furnished with a counter where the keeper of the place can have his headquarters.

The whole interior woodwork has been varnished over neatly by Woods Bros., the well known Winsor street painters. The inside measurement of the building is about 15 by 48 feet. The lockers, which are each 12 by 14 inches in width and depth, respectively, and three and one-half feet high, are arranged in two tiers on two sides of the structure. Mr. Joseph James, who formerly had supervision of the old city bath house at the foot of River street, is in charge of the present one, and will be assisted by a young man in a bathing suit, Alexander J. Smith, who will be on duty all the time, giving his special attention to guarding bathers against the danger from the strong current at this point. There are also to be two life lines for purposes of protection, and there will be signs hung at proper intervals to show the condition of the tide. During the day the house will be at the disposal of men and boys, but in the evening men only will be allowed to use it. The bath house will probably be open on Sundays.

A large amount of work is contemplated by the park commission to improve the beach and the grounds around the bath house. A dike will be built diagonally opposite the house to correspond to the old dike already standing on the other side. To this new dike the beach will be extended, making it nearly twice its present extent. An extended area around the building will be platted with turf, the grass to be carried down to within 15 feet of the water at high tide. It is expected that the turfing will be begun this fall. By another year the park commission expect to set out a number of trees in the vicinity of the bath house, a feature that will add materially to the attractiveness of the spot. Magazine street will be extended to the new grounds. Chairman Cox says that the best of order is to be preserved at any cost among the bathers by day or by night. Some of the residents along Magazine street have expressed fears, it is understood, lest the crowds that will pass their

houses, going to or from the beach, will cause them great annoyance. Mr. Cox states positively that his department is ready to take the most stringent measures necessary to keep order to the latter bath along the street or streets approaching the beach and at the beach itself. A board walk has been laid for the convenience of the bathers, from the entrance to the bath house down to the edge of the water at low tide.

Bathers must provide their own suits, but the lockers are free. The man in charge will supply towels, if desired, at a small cost. The check system will be used, and only one "master" or general key will be used for the lockers. The city had the plans for the bath house and the grounds about it prepared by Olmsted Bros., the landscape architects of Boston. The work has been done expeditiously, and has involved an outlay of about \$1500.

Newspaper article on p.
3 in *Cambridge Chronicle*,
July 15, 1899,
Historic Cambridge
Newspapers online.

**Note - DCR has addressed all recommended roof work from the following report since it's 2013 publication.*



60 Washington St, Suite 401
Salem, Massachusetts 01970-3517
P.O. Box 01971-8560
T 978.745.6817 | F 978.745.6067
www.structures-north.com

January 28, 2013

Clark & Green, Inc. Architects
113 Bridge Street
Great Barrington MA 01230-1338

Attention: Steve McAlister

Reference: Department of Conservation and Recreation (DCR)
Magazine Beach Powder House, Cambridge, MA

Dear Steve:

On September 6, 2012 we visited the site with you to review general visible existing conditions, to determine an initial approximate scope of work, and to perform a general, "due diligence" inspection of the structure. On January 17, 2013 we made a follow-up site visit to review portions of the building that were hidden by storage debris during our first visit. Prior to our visit we downloaded some information, including an April 2009 report by Ikegami and Laszlo, from the website <http://magazinebeach.wordpress.com>. At the site you provided us with some copies of the 1954 renovations to the building. The following is a summary of conditions that we noted during our visits and of our recommendations.

Estimated Construction Urgency

We have included repair priority levels within this report.

Urgency levels are assigned as follows:

A = Urgency level if no change of use or renovations are made.

B = Urgency level if building use is changed or renovations are made.

1= Immediate threat to public safety and/or stability of the structure, or in the case of change of use or renovations, the repairs are likely to be required by code.

2=Possible or eventual threat to public safety and/or stability of the structure (level 1) if not corrected soon. Recommended to repair within 1 to 2 years.

3=Will worsen to level 2 or cause other problems if not corrected. Recommended to repair within 2 to 3 years.

4=Will eventually worsen and increase in severity if not corrected. Recommended to repair within 3 to 5 years.

5=Would be a good improvement to make, eventually.

General Description

The existing building currently consists of a one-story structure with a lumber framed gable roof with hipped ends. The main building is roughly 26ftx55ft in plan, with a 14ftx52ft shed roofed wing on the north side. The building is sited off of Memorial Drive, approximately 20 yards from the Charles River. The building has served several purposes and undergone several renovations since its original 1818 construction.

The original 1818 building served as a gunpowder magazine, which explains the main building's 4 ft thick stone masonry walls. It is currently believed that the north wing was a later addition, which the masonry joint at the interface between the main building and the north wing would corroborate. Past photos appear to show the north wing once being a walled exterior courtyard without the current roof and wood stud kneewalls. The original building may have once had a masonry barrel-vaulted roof or ceiling to protect the gunpowder from mortar attacks. This could explain why there are large stone buttresses on the outsides of the north and south walls at approximately the middle of the building's length, as a barrel-vault would have exerted lateral thrust forces on the exterior walls. This also agrees with the copy of the 1817 Columbian Centinel advertisement for masons that was on site during the first site visit.

In 1900 the building was converted into a Bath House for swimmers using the Charles River. In 1954-55 the building was converted to a garage for the MDC. During these renovations some of the upper stones of the main building were likely removed to create windows, and the current lumber rafter framed roof was installed. The north wing was also roofed over using wood stud kneewalls down to the thinner, approximately 2 ft thick, stone masonry walls. These renovations were also likely when the current concrete floor slab, along with the stone masonry chimney (used for HVAC/mechanical venting only, there are no fireplaces) were added.

The roof framing of the main building gable consists of 2x8 rafters at 16 inches on center, and 2x6 collar tie ceiling joists at 32 inches on center. The collar ties are hung from the rafters with boards at approximate quarter points of their spans. The roof currently has slate tile roofing. Our calculations, using modern code-prescribed snow loads, indicate that the existing rafters, where not in a damaged condition, are approximately 20 percent overstressed.

Structures North
January 28, 2013

DCR Magazine Beach Powder House
North Andover, MA

Noted Conditions and Recommendations

The following conditions were noted during our visits-

Exterior Walls

- On the inside face of the main building's 4ft thick exterior stone walls and the north addition's 2ft thick exterior stone walls, several cracks were observed:
 - 1) A diagonal crack in the west end of the main building's south wall. The approximate crack location is identified on the attached SKS-1 floor plan with the number "1". The crack is high at the east, low at the west. Please see photos 1 and 2 in the Photo Appendix. On the exterior face of the wall, the crack is reversed with the high end on the west, low end on the east, as shown in photo 8.
 - 2) A nearly vertical crack in the south end of the north addition's west wall. The approximate crack location is identified on the attached SKS-1 floor plan with the number "2". Please see photos 3 and 4 in the Photo Appendix.
 - Cracks 1 and 2 noted above, combined with the opening in the west end of the main building's north wall (noted on SKS-1) give the indication that the entire west end of the main building has tried to move relative to the rest of the building. Given that a DCR representative on site (9/6/12) noted that there have been problems with "sinking issues" at the site, and the notes in the 2009 report by Ikegami and Laszlo regarding changes in grading and the addition of a site retaining wall next to the building in 1900, we suspect that soils issues may be causing the movement and cracks in the walls. Our calculations indicate that the walls should be able to resist any roof thrust loads through pure dead weight resistance of overturning, so we would not anticipate roof loads to have caused the cracks. We suspect that the walls are solid masonry, not inner and outer masonry with rubble infill, but it may be advisable to investigate the wall construction to assure that the cracks aren't caused by failure of a rubble inner core. Based on the 1817 advertisement to masons, we suspect the building does not have timber pile foundations, but the 4 foot thick masonry walls may have been built on timber planks which could be rotting and shifting. *We recommend hiring a geotechnical engineer to investigate soil conditions on site, as well as further investigation of*

nearby site retaining walls for evidence of movement and a test pit to determine existing foundation conditions. In the meantime, the cracks should be repaired with surface pointing and low lift injection with a pozzolanic based grout, and a monitoring program should be instituted to measure further movements. A2/B1

- At the west end of the addition's north wall there is some spider cracking in the mortar joints. The approximate location of this area of cracks is identified on the attached SKS-1 floor plan with the number "3". Please see photos 5 and 6 in the Photo Appendix. We suspect that this cracking is just in what appears to be a surface coat of parging.
- The exterior faces of the exterior walls are in need of complete repointing, as the mortar joints are typically significantly deteriorated, but the stones generally appear to be in good condition, with the exception of graffiti and a few locations where stones have fallen out and are missing. There appears to be a cementitious mortar repointing that was added more recently (10 to 20 year range) that has shrunk and cracked and is no longer effective, and is possibly made from unsuitable materials. The exterior south buttress is in especially bad condition, and it was noticed during the 2nd site visit that rain water flows off the roof and hits the top of the buttress, whereas the rest of the wall is partially protected by the roof's eave overhang. *We recommend a complete, deep joint repointing throughout the exterior using historically appropriate mortar. General A4/B3 with localized areas of A2/B2 where stones are missing. The addition of rain gutters may help prevent damage to the buttress.*

Roof

- The roofing has numerous holes through it, and likely many locations of rot damage that will soon lead to more holes. Large portions of the slate roofing were either missing or patched over with what appeared to be haphazardly installed temporary roofing. The holes through the roof sheathing allowed rain directly into the interior. Much of the roof sheathing is likely rot damaged. *We recommend complete replacement of the roof sheathing throughout the entire roof. New or replacement roofing will likely not be successfully fastened to the remaining existing sheathing, and temporary patches are likely to fail allowing more rain/snow into the building causing further moisture and animal damage. A1/B1*

- As noted in the General Description section, our calculations for representative roof framing indicate that the rafters are roughly 20 percent overstressed. This overstress assumes that the roofing remains slate. If the slate roof were replaced with an asphalt shingle roof, the overstress would be approximately 5%, which might be an acceptable level of overstress. There are also areas, most notably where roof sheathing is damaged or missing, where rot damage has extended to the rafters. We probed rafters, where accessible with a ladder near the eaves, with an awl and found that approximately 25% of the main building's rafters seemed to have rot damage at the interior, and approximately 10% of the low shed roof's rafters had rot damage. At the exterior, where the rafters cantilever over the stone wall to create an eave overhang, an estimated 60% to 70% of the rafter ends are rot damaged. At the west end of the main building, where the hips intersected the ridge, there also appeared to be localized fire damage that had been only partially replaced. *We recommend one of two options, depending on contractor cost estimates or preferences: **A2/B1***
 - *Option 1: Treat the existing framing that isn't rot damaged with boric acid and sister existing rafters with new 2x10 rafters and 2x6 hung collar-ties/ceiling joists prior to installing new sheathing. The new sheathing would attach to the new sisters. The eave overhang ends of existing rafters would typically need to be cut off and new overhangs scabbed onto the rafters. Existing rafters that are rot damaged would be replaced.*
 - *Option 2: replace the roof entirely with new framing consisting of collar-tied 2x10 rafters at 16 inch on center. The collar-ties/ceiling joists would again be 2x6's at eave level, but at every rafter rather than every other rafter, and would have hangers up to the rafters. The new rafters would be used for the eave overhangs too, cantilevering over the stone wall similar to the way the original rafters did. It may be possible to salvage existing rafters that are not rot damaged and re-use them, doubled-up, in one portion of the building if it is desirable for historic or aesthetic reasons as a display area.*
 - *We may be able to investigate other alternatives for localized rafter replacement if the roofing is changed to asphalt shingle.*
- At the west side of the main building the 6x6 timber sill beam on top of the plywood-infilled windows within the exterior wall supporting the roof rafters appears to be fire damaged. The location is noted with a "4" on the attached

Structures North
January 28, 2013

DCR Magazine Beach Powder House
North Andover, MA

SKS-1. It appears that this beam may be OK despite being charred. The sill beams, in general, appeared to be in decent condition, but at some locations water is entering through the damaged roof and soaking into the sill beam. *If the roof is not repaired soon, this will cause rot damage in the sills. The roof should be repaired as soon as possible to allow the sills to dry before rot damage occurs.* **A2/B2**

- Connection of the existing 6x6 timber sills on top of the exterior walls to the stone walls is unknown. If there are connections, they are hidden. *We recommend adding connectors to provide a tie-down to resist wind uplift forces on the roof, and to transmit shear forces from the roof into the stone walls.* **A2/B2**

We trust that the above information will be helpful in understanding the current condition and rehabilitation needs of this historic structure. Please contact us if we can be of further assistance.

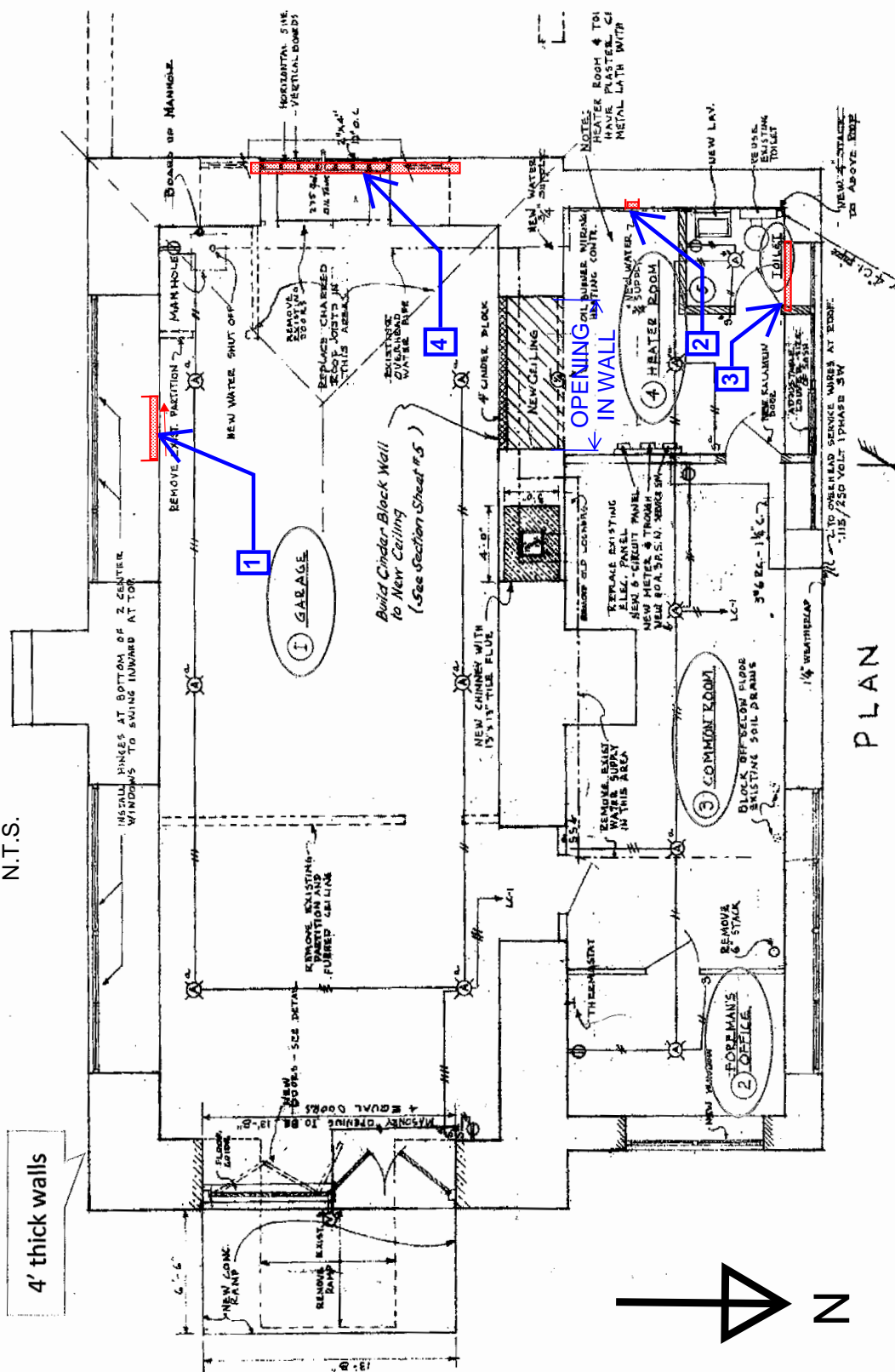
Respectfully yours,



Jefferey J. Reese, PE
Structures North Consulting Engineers, Inc.

SKS-1 Floor Plan

N.T.S.



Structures North
January 28, 2013

PHOTO APPENDIX DCR Magazine Beach Powderhouse
Cambridge, MA



Photo 1: Diagonal Crack in interior face of main building's south wall at west end.



Top



Middle



Bottom

Photo 2: Diagonal Crack in interior face of main building's south wall at west end.
(Three close-up photos)

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January 28, 2013

PHOTO APPENDIX

DCR Magazine Beach Powderhouse
Cambridge, MA



Photo 3: Crack in interior face of addition's west wall at south end.



Top



Middle



Bottom

Photo 4: Crack in interior face of addition's west wall at south end.
(Three close-up photos)

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PHOTO APPENDIX DCR Magazine Beach Powderhouse
Cambridge, MA



Photo 5: Spider cracking in the mortar joints at the interior face at the west end of the addition's north wall.



Photo 6: Spider cracking in the mortar joints at the interior face at the west end of the addition's north wall.

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PHOTO APPENDIX

DCR Magazine Beach Powderhouse
Cambridge, MA



Photo 7: Southwest exterior elevation



Photo 8: South exterior elevation

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PHOTO APPENDIX DCR Magazine Beach Powderhouse
Cambridge, MA



Photo 9: East exterior elevation



Photo 10: North exterior elevation

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PHOTO APPENDIX DCR Magazine Beach Powderhouse
Cambridge, MA



Photo 11: Typical exterior wall stone joint deterioration (west side of building)



Photo 12: Roof damage from exterior

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January 28, 2013

PHOTO APPENDIX

DCR Magazine Beach Powderhouse
Cambridge, MA



Photo 13: Roof damage from interior



Photo 14: Roof damage from interior

FEASIBLE USES AND ESTIMATED COSTS FOR STABILIZATION

Feasible Uses and Building Code Aspects of Reuse

Given the limitations and constraints of the building, and the desire to find a new use for it appropriate to the park's current needs and possibilities, the feasible uses for the structure fall into four categories:

1. Stabilize as an historic feature in the park, but without further use for the time being.
2. Convert to DCR use as an operations support building.
3. Rehabilitate as an interpretive center.
4. Rehabilitate to the needs of third-party permit or lease, for functions such as food and beverage concessions, public assembly (crafts, lectures, music, etc.), or rentals (bicycles, kayaks, etc.).

The building can be repurposed without significant building code problems or excessive conflict between the code and the desire to preserve its historic fabric. Major code-related observations include:

-As a significant structure in a historic district, it is exempt from energy-code requirements, which would allow 3-season use without having to insulate the stone walls or use excessive amounts of rigid insulation on the roof, distorting the historic look of the building. To illustrate, four feet of stone has a thermal resistivity value, or R-value, of only about 3.84, whereas over R-20 is the norm for most new construction. Two inches of closed-cell polyurethane rigid insulation and wood decking above the exposed roof decking would yield an R-value of about 10.6, without looking unduly thick and “non-historic,” although this is still well below the requirements for most new construction, either commercial or residential. However, it is probably sufficient for 3-season use. Four-season use is possible, although the building would be more expensive to operate than otherwise, due to heat loss.

-Due mainly to its small size, the building will not require a fire sprinkler system for life safety reasons, for any of the types of uses mentioned previously (although it may be desirable to install a system to prevent loss of the building roof). Its single-level layout at grade will allow for relatively easy accommodation of persons with disabilities. The single level also allows for two exits from the building, presumably through the non-stone portions of the east and west walls.

-If the chosen use is as an assembly space (such as a lecture setup in the main magazine room), the occupant load should be restricted to 100, in order to allow the use of just two single-occupancy toilet rooms. The plumbing code currently requires one toilet per 50 females and one per 100 males for assembly use. Assuming a 50:50 ratio between male and female building occupants, two separate toilets are needed. Once the assumed number of females rises to 51, a third toilet is needed, resulting in a significant loss of floor space; hence the restriction on occupant load at 50 females and 50 males, using the 50:50 ratio. In any case, an occupant load of 100 is a realistic limitation on fairly intensive use of the building, regardless of plumbing code requirements.

-If the use is to be a cafe-type use, the occupant load should be posted at a maximum of 60, also to allow the use of just two single-occupancy toilet rooms, as above. Once again, this is an appropriate number for sit-down dining, without regard to plumbing code requirements, given the limited floor area available. A higher occupant load would result in more space-consuming toilets.

-If the building is used for rental of recreation equipment, a single toilet room for a very small staff would suffice. Public restrooms would be elsewhere in the park.

Proposed Priorities for Construction

Based on the structure's character-defining features, preservation priorities, existing conditions assessment and structural assessment, we recommend the following phased priorities for construction.

Priority 1 - Immediate Stabilization:

- Reroof both magazine and north addition, including repair or replacement of framing and decking that is to remain and be exposed on the interior. The magazine roof should have all existing roofing removed and be reroofed with non-weathering slate, and the north addition should also have all roofing materials removed, and a mid-slope roofing system such as soldered copper or EPDM installed.
- Remove graffiti as part of initial work.
- Provide exterior security lighting at immediate site.
- Initiate testing & observation program to detect any settlement relative to existing cracks.

Priority 2 - Restoration of Historic Fabric:

- Cut and repoint exterior joints on the magazine and north addition; retain all chinking; tool joints to match detailing from each section; use correct mortar.
- Restore window sash to 8-light configuration of 1918-9 renovation.
- Retain exterior novelty siding at upper wall of north addition or replace to match existing siding.
- Construct period appropriate exterior wood doors at east and west entries based on 1930s photos (use 1954 design for east entry if it is to be left at its current size).
- Restore east entry granite opening to its 1918-9 dimensions including restoration of the windows above the door.
- Use vocabulary of matched boarding for new interior partitions.
- Remove interior plaster, paint, whitewash, mechanical, plumbing, and electrical systems, and interior wood framed partitions.

Priority 3 - Rehabilitation for Reuse:

- New mechanical/plumbing/electrical infrastructure & systems, including any required detection and alarm systems.
- New accessible restroom(s) depending upon use.
- Other tenant improvements (partitions, food service, etc.)
- Interior and exterior signage & graphics, including any historic display.
- Creation of accessible parking and route to building.
- Associated site improvements (drainage, bicycle racks, paved walkways, etc.).

Estimated Costs for Stabilization

Metals

Masonry anchors for wood roof plate	50	locs.	@	100	ea =	5,000
Rafter-to-plate connectors	156	units	@	20	ea =	3,100
Steel tension rods w/connectors	7	units	@	1,000	ea =	<u>7,000</u>
						\$15,100

Carpentry

Rafter sistering-16' sisters	26	rafters	@	150	ea =	3,900
Rafter replacement	50	rafters	@	150	ea =	7,500
Decking replacement	1,000	sf	@	10.00 /	sf =	10,000

Blocking, rafter tails, misc.	164	rafters	@	30	ea =	4,900
Cornice/soffit at low roof	78	lf	@	75 / lf	=	<u>5,900</u>
						\$32,200

Roofing and Flashing

Slate roof including accessories	20	squares	@	2,800 / sq	=	56,000
Insulation-1" polyiso board	20	squares	@	200 / sq	=	4,000
60-mil EPDM (low roof)	8	squares	@	1,000 / sq	=	<u>8,000</u>
						\$68,800

Painting

New exterior cornice & soffit	1	ls	@	5,000	ea =	5,000
Stain roof framing/decking	2000	sf	@	2.30	sf =	4,600
Paint steel	1	ls	@	800	ea =	800
Graffiti removal	1	ls	@	2,000	ea =	<u>2,000</u>
						\$12,400

Electrical

Service and Exterior Security Lighting	1	ls	@	\$15,000	ea =	<u>\$15,000</u>
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SUBTOTAL \$143,500

General Conditions	@	10 % =	13,950
General Administrative O & P	@	10 % =	15,345
Performance & Payment Bond	@	1.5 % =	2,533
Design Contingency	@	10 % =	17,134
Escalation to Summer/Autumn 2013	@	4 % =	<u>7,538</u>

SUBTOTAL \$56,500

ROUNDED GRAND TOTAL \$196,000

