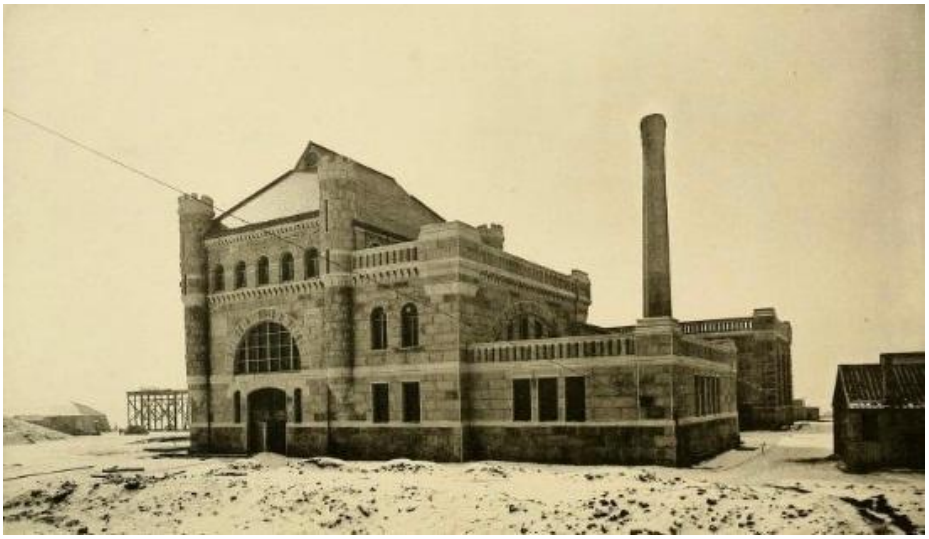
DRAFT

Calf Pasture Pumping Station
Boston Landmarks Commission
Study Report



Petition #263.18
Boston Landmarks Commission
Office of Historic Preservation
City of Boston

Report prepared by Wendy Frontiero, preservation consultant; and BLC staff. All contemporary photographs taken by Wendy Frontiero in June 2019, unless otherwise noted.

DRAFT

Report on the Potential Designation of

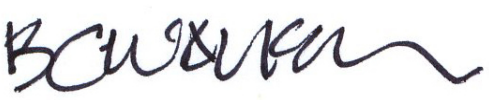
Calf Pasture Pumping Station

435 Mount Vernon Street, Boston (Dorchester), Massachusetts

As a Landmark under Chapter 772 of the Acts of 1975, as amended

Approved by: 

Rosanne Foley, Executive Director — April 2, 2024 — Date

Approved by: 

Bradford C. Walker, Chair — April 2, 2024 — Date

Draft report posted on *April 2, 2024*

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1.0 LOCATION OF PROPERTY

1.1 Address

According to the City of Boston's Assessing Department, the Calf Pasture Pumping Station, along with the Gate House/Filth Hoist, is located at 435 Mount Vernon St., Boston, MA 02125. The West Shaft Entrance address is listed as 200 William T. Morrissey Boulevard, Boston, MA 02125.

1.2 Assessor's Parcel Number

The Calf Pasture Pumping Station and Gate House/Filth Hoist are located on parcel #1303413000. The West Shaft Entrance is located on parcel #1303400000.

1.3 Area in which Property is Located

Columbia Point in the Dorchester section of Boston

1.4 Map showing Location

Figure 1. Map showing the boundaries of parcels 1303413000 and 1303400000. A = Pumping Station, B = Gate House/Filth Hoist, C = West Shaft Entrance.

2.0 DESCRIPTION

2.1 Type and Use

Located on Columbia Point in the Dorchester section of Boston, the Calf Pasture Pumping Station Complex consists of three buildings—the Pumping Station, Gate House/Filth Hoist, and West Shaft Entrance— all Romanesque Revival in style and constructed in 1883. The three buildings serviced a then-innovative public sewerage system and remained in continuous use for 85 years. The Calf Pasture Pumping Station Complex ceased active operations and has been vacant since the Deer Island Sewage Treatment Plant was built in 1968, on the north side of Boston Harbor.

2.2 Physical Description

The Calf Pasture Pumping Station Complex includes three buildings in two separate locations: to the west, the Pumping Station and the Gate House/Filth Hoist are located on the southwest side of Mt. Vernon Street (also known as University Drive North), a short distance from its intersection with University Drive West; and to the east, the West Shaft Entrance is located near the intersection of Mount Vernon Street, University Drive East, and Columbia Point Road. The Pumping Station and Gate House/Filth Hoist flank an unnamed access road to the Clark Athletic Center **(Figure 8)**. These two buildings stand on virtually flat sites. A surface parking lot and a hillside field still known as Calf Pasture are located directly north of the Pumping Station and Gate House/Filth Hoist; the Edward M. Kennedy Institute and John F. Kennedy Presidential Library and Museum stand to the northeast. A heterogeneous mix of large-scale academic, residential, and recreational facilities belonging to the University of Massachusetts Boston (UMass Boston) surround the Pumping Station and Gate House/Filth Hoist to the east, south, and west.

The West Shaft Entrance stands on an isolated site approximately one-quarter mile east of the Pumping Station and Gate House/Filth Hoist. It occupies the level atop a small promontory at the edge of Boston Harbor, part of the Harborwalk that lines the waterfront on this part of Columbia Point. The Massachusetts Archives Building and UMass Boston's University Hall stand to the west.

The Pumping Station and Gate House/Filth Hoist are constructed of granite block and granite trim, while the West Shaft Entrance is built of brick with brick and granite trim. Carefully detailed, all three buildings feature hipped roofs and arched fenestration. High, metal picket fences currently surround each of the structures, in close proximity to the buildings' exterior walls. Most of the buildings' doors and windows have been infilled with wood panels or brick.

Three modern, utilitarian structures stand to the south of the Pumping Station. A sizable storage structure with four open bays defined by steel arch roofs and massive concrete block walls is located to the south of the Pumping Station. A small, concrete block outbuilding and wood-frame shed stand along the access road at the southwest edge of the Pumping Station site. These structures are not considered as contributing to the architectural or historical significance of the Pumping Station Complex.

<u>Pumping Station</u>

The Pumping Station is an L-shaped structure on parcel #1303413000 consisting of a large main block (the Engine House) with five distinct, symmetrically organized sections and a one-story rear ell (Boiler House). Oriented northwest/southeast and measuring 201 feet by 72 feet, the Engine House has a three-story center section with a gable-on-hip roof, flanked by two-story volumes with flat roofs. One-story side wings with flat roofs extend to the northwest and southeast. As originally

constructed in 1883, the Engine House included the three-story volume and the one- and two-story blocks to its northwest **(Figure 17)**; the two southeastern sections were added ca. 1904.

Also dating to 1883, a one-story Boiler House projects from the back of the northern end of the Engine House; it terminates at a two-story remnant of a former coal house. The Boiler House rises one-story to a gable roof with gabled clerestory.

The Engine House rises from a granite block foundation to walls of monumental, rock-faced granite blocks, a beveled water table, and a shaped granite belt course between the first and second stories, which becomes the cornice molding of the one-story end wings. Cornice trim also includes simple console brackets on the two-story volumes and bold, curved dentil blocks on the three-story center volume.

The gable-on-hip roof of the three-story center section is sheathed with asphalt shingles and framed by slender, two-story-high, crenelated turrets at its four corners. The top edges of the one- and two-story volumes are lined with heavy parapets articulated with battlements (now bricked-in) and substantial corner pilasters. The material of the flat roofs on the one- and two-story volumes is not visible from the street. Unless otherwise noted, windows typically have rectangular openings on the first floor and round-arched openings with granite voussoirs on the second and third floors. All the trim is granite. Windows typically feature a beveled sill block and dressed edges on the sides and top; nearly all openings are infilled with wood panels or with brick.

The Mount Vernon Street (University Drive North) façade (northeast elevation, **Figure 2**) contains a large, wide, center doorway with a segmentally arched opening flanked by a round-arched window on each side. At the second level, a monumental, semicircular arched window surmounts the doorway, flanked by decorative stone plaques with channeled frames and bull's-eye corner blocks in the spandrels. The plaque to the left of the entrance is carved with the letters "B.I.S." (Boston Improved Sewer, **Figure 7**); the plaque to the right is inscribed with the year 1883. The third story of the central volume has five round-arched windows; centered on the corner turrets are a thin rectangular window on the third-floor level and a slender round-arched window above. The two-story volumes each display two window bays, with rectangular windows on the ground floor and round-arched windows above. The façades of the one-story wings are similar, but not identical, to each other: the southeastern wing has four off-center rectangular openings, loosely grouped as a triplet and a single opening, while the northwestern wing has three grouped, off-center rectangular openings.

The northwest side elevation (facing the Gate House/Filth Hoist; **Figure 3**) displays five grouped rectangular windows centered on the first-floor wing and a broad arched window across most of the second floor. Third-floor windows on the center volume are not clearly visible but contain round-arched openings with granite keystones.

The rear (southwest) elevation of the Pumping Station (**Figure 5**) is similar to the façade, with turrets framing the three-story center volume, which also features a large, segmentally arched doorway surmounted by a monumental, semicircular arched window and five bays of round-arched windows at the upper story. Because of the attached Boiler House ell, the northwestern end of the rear elevation is largely blank; a recessed single-leaf door is distinctive in the westernmost bay. The two-story volume on the southeast of the center block has three bays on each floor, including a rectangular door and two windows at the first floor and a round-arched doorway, and two round-arched window openings at the second story. The one-story wing contains four grouped rectangular windows, set off-center.

On its southeast side elevation (**Figure 6**), the Pumping Station exhibits two pairs of rectangular windows on the one-story wing and 8 rectangular windows, irregularly set in loose groups of one, five, and two, at the second story. As on the northwest elevation, the third floor of the center volume is not clearly visible. It appears to have a brick wall lit by round-arched windows with granite keystones.

Oriented northeast/southwest and measuring 80 feet by 60 feet, the Boiler House rises one story to a gabled roof with a modest gabled clerestory (**Figure 4**). The long side elevations each contain a slightly off-center doorway with a segmentally arched lintel ornamented with a keystone and a high, molded, granite entablature. The northwest elevation has three windows on each side of the slightly off-center entrance, while the more asymmetrical southeast elevation has only five window bays. Remnants of copper flashing and gutters remain at the asphalt-clad roof. Although most of the clerestory fenestration is boarded up, a narrow band of small-paned windows is visible on the southeast side. The southwest end of the Boiler House abuts a two-story fragment of granite block wall with stepped brick infill marking the connection with the former coal house. The granite portion of the wall retains a small rectangular doorway, while a small, round-arched recess surrounds another single-leaf doorway in the brick infill wall.

The Pumping Station has been vacant for several decades. It has extensive mortar deterioration, plants growing out of many parts of the walls and gutters, and large areas of missing roof cladding. Alterations are largely confined to infilled door and window openings, and modern sash inserted in some of the infilled original window openings.

Gate House/Filth Hoist

Rectangular in shape and measuring approximately 25 by 32 feet inside, the modestly scaled Gate House/Filth Hoist (**Figures 8–11**), also located on parcel #1303413000, rises one story to a hip roof clad with asphalt shingles. Rock-faced granite block walls are trimmed with a beveled granite cornice. Window and door trim consists of a granite archivolt with dressed edges at the top and sides of round-arched openings, and a shaped sill block at the windows. All window openings are bricked in. The doorways on the northeast and southwest elevations contain a molded granite entablature at the spring line of the arched opening; the openings are infilled with brick in the arched top, wood shingles below, and a modern flush panel door. The asymmetrical northeast and southwest elevations each feature an offset doorway and single window bay. Two window bays are centered on the northwest and southeast elevations; the southeast elevation also features an exterior granite chimney.

While the building appears to be in stable condition overall, flashing and trim are missing along most of the roof edge and plants grow at the gutter line and in mortar joints. Alterations are confined primarily to infill of the doors and window openings.

West Shaft Entrance

The modestly scaled West Shaft Entrance, (**Figures 12–15**) located on parcel #130340000, is a rectangular structure with a circular end at the southeast side; it, too, is oriented northwest/southeast. The building rises one story to an asphalt-clad hip roof. Brick walls are trimmed with a beveled granite sill band, a granite belt course featuring rock-faced stone with dressed edges, brick pilasters with granite trim below the belt course, alternating projecting header bricks above the belt course, and a decorative brick cornice with corbelled and basket-weave

courses. Shaped wood brackets, occurring singly and in pairs, support the roof eaves, which are trimmed with a plain wood fascia band; remnants of simple wood cornice molding survive.

The symmetrical northwest elevation contains a center entrance with a wide, flush, metal door having metal strap hinges within a wide, round-arched opening. The long side elevations and the curved end of the West Shaft Entrance building each contain two round-arched windows. Archivolts of the round-arched doorway and windows include rows of header brick and soldier brick and an outer band of rock-faced granite. All window and door openings are bricked in. The building is missing sections of roof, its walls are bowing, there is widespread mortar deterioration, and severe cracking of brick.

2.3 Contemporary Images

Figure 2. Pumping Station: Engine House.

Figure 3. Pumping Station.

Figure 4. Pumping Station: Engine House and Boiler House.

Figure 5. Pumping Station: Boiler House and Engine Room, rear elevation.

Figure 6. Pumping Station: Boiler House and Engine House.

Figure 7. Pumping Station.

Figure 8. Gate House/Filth Hoist and Pumping Station.

Figure 9. Gate House/Filth Hoist.

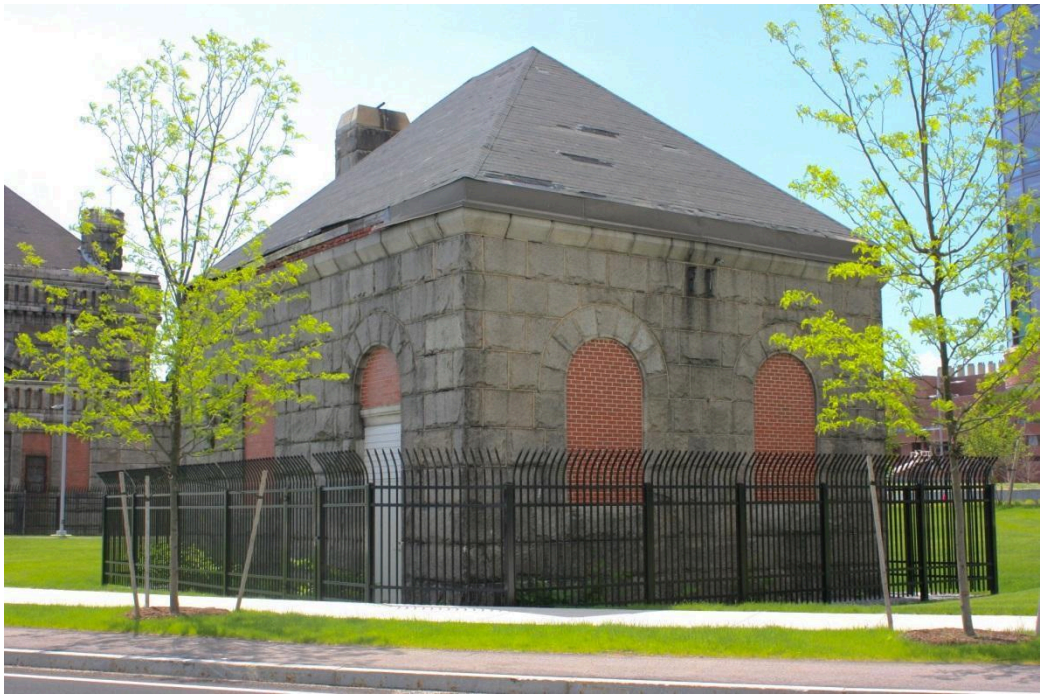

Figure 10. Gate House/Filth Hoist.

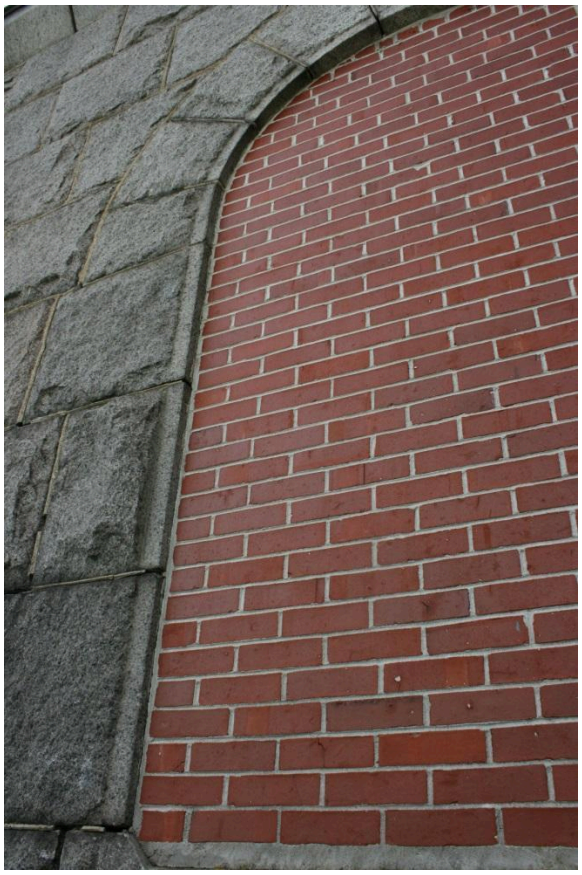

Figure 11. Bricked-up window at the Gate House/Filth Hoist.

Figure 12. West Shaft Entrance.

Figure 13. West Shaft Entrance.

Figure 14. West Shaft Entrance.

Figure 15. West Shaft Entrance.

2.4 Historical Maps and Images

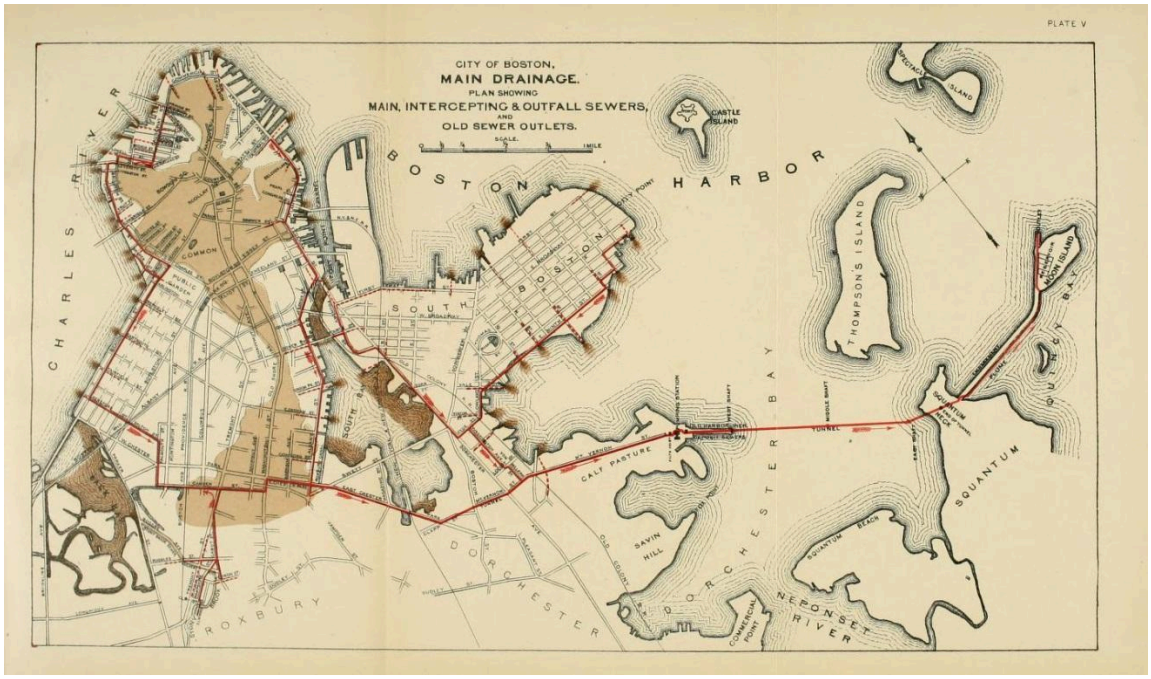

Figure 16. *Main Drainage Works of the City of Boston.* Boston: Rockwell & Churchill, 1988.
Source: https://blogs.umb.edu/pumpingstation/category/building-a-major-sewer-system/

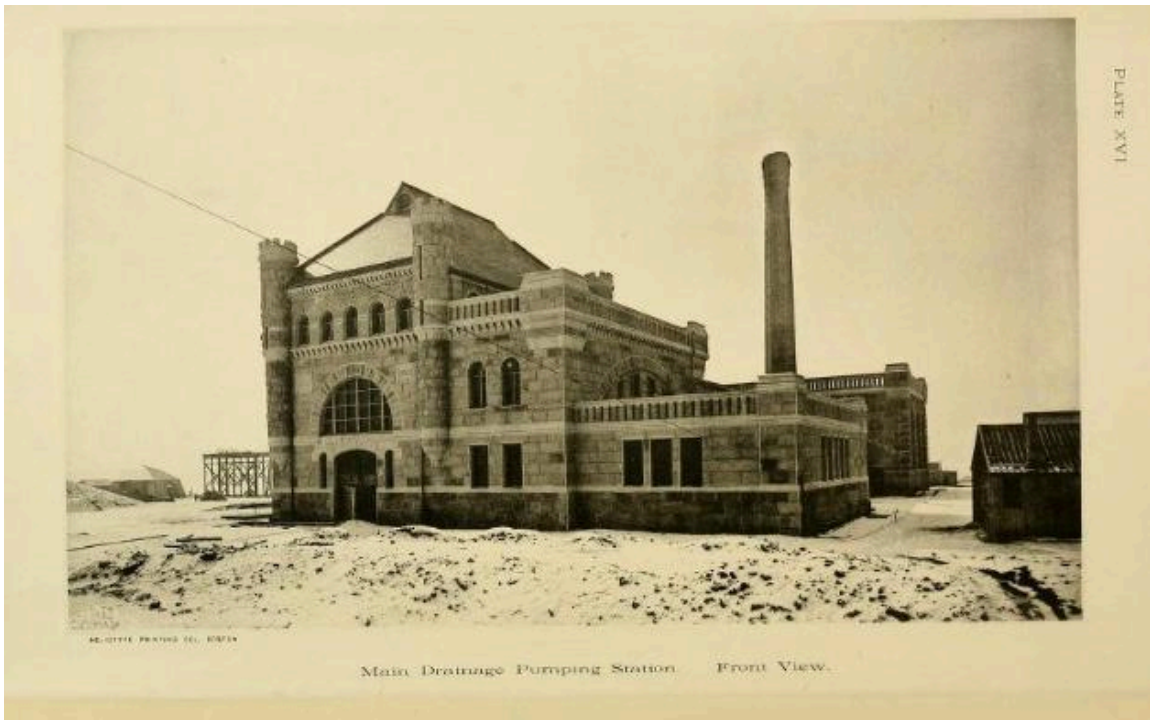

Figure 17. View of the front of the Pumping Station
Source: Clarke, Eliot C. *Main Drainage Works of the City of Boston*. Boston: Rockwell & Churchill, 1888.

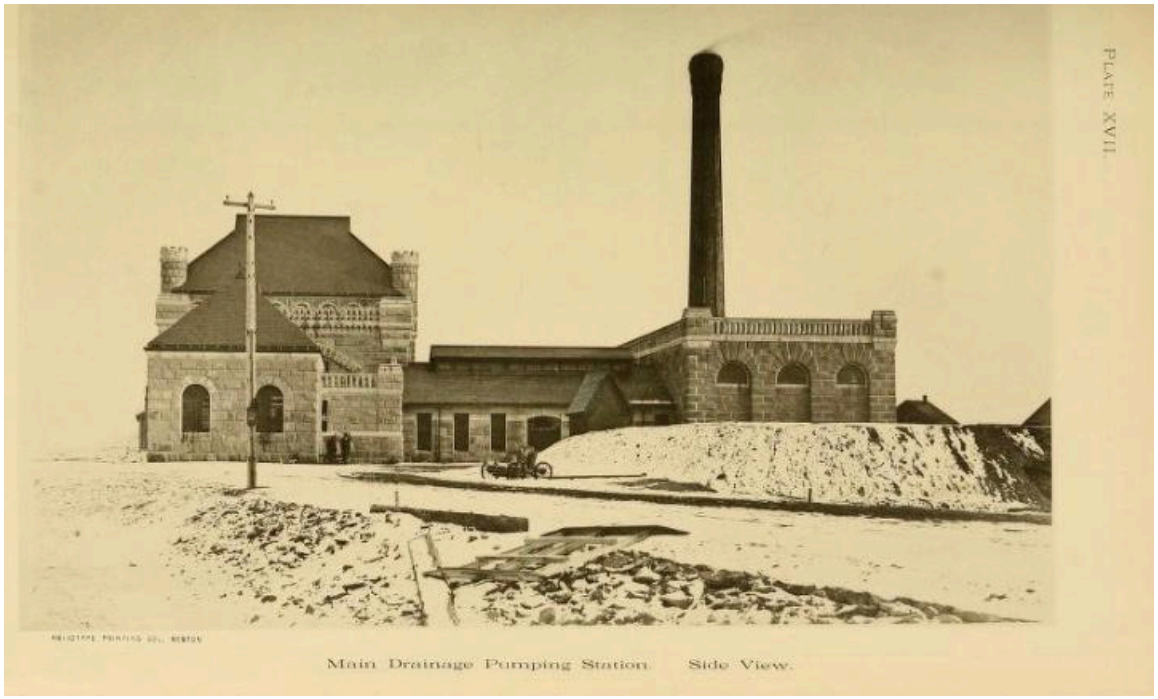

Figure 18. Pumping Station (Clarke, 1888)
Source: Clarke, Eliot C. *Main Drainage Works of the City of Boston*. Boston: Rockwell & Churchill, 1888.

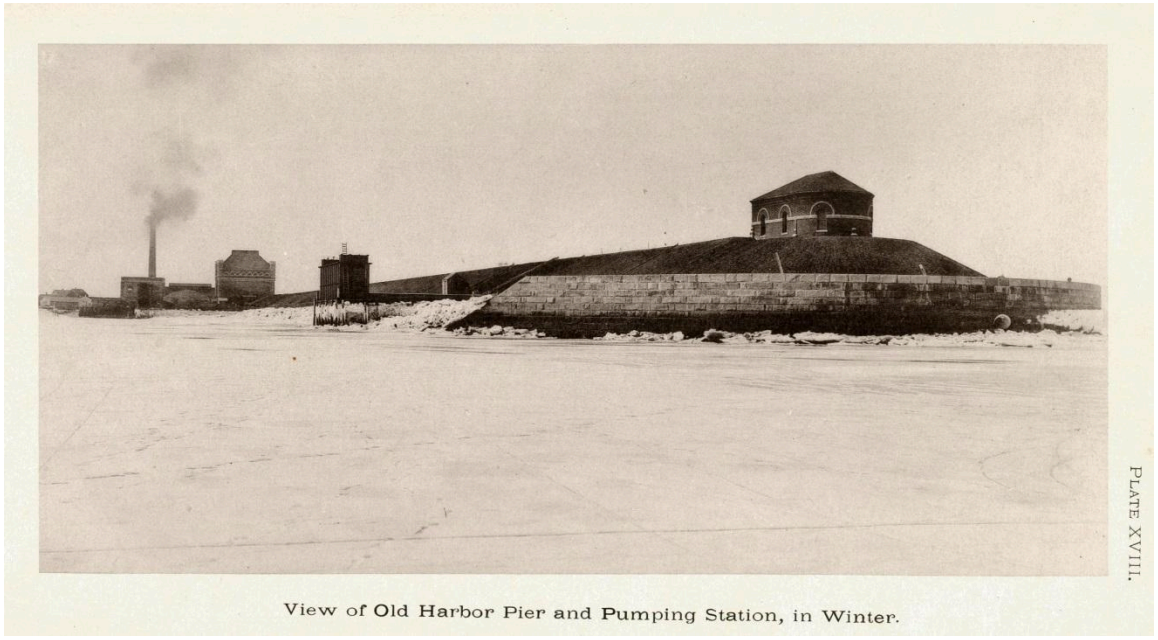

Figure 19. Pumping Station and West Shaft Entrance
Source: Clarke, Eliot C. *Main Drainage Works of the City of Boston*. Boston: Rockwell & Churchill, 1888.

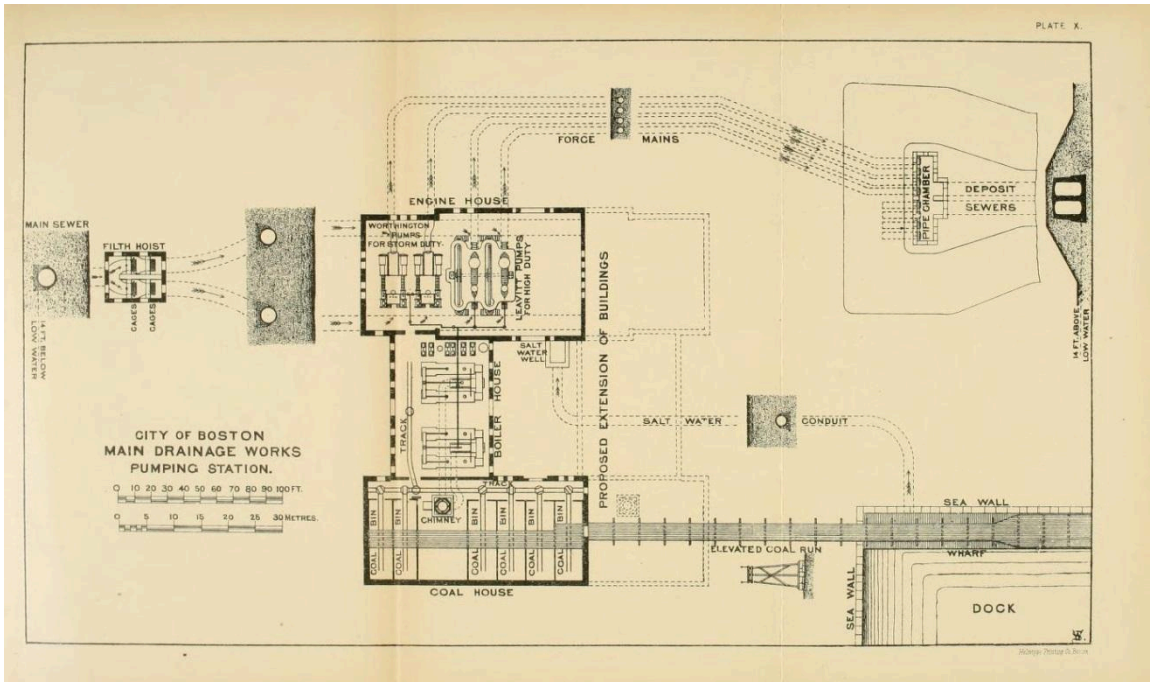

Figure 20. Pumping Station plan
Source: Clarke, Eliot C. *Main Drainage Works of the City of Boston*. Boston: Rockwell & Churchill, 1888.

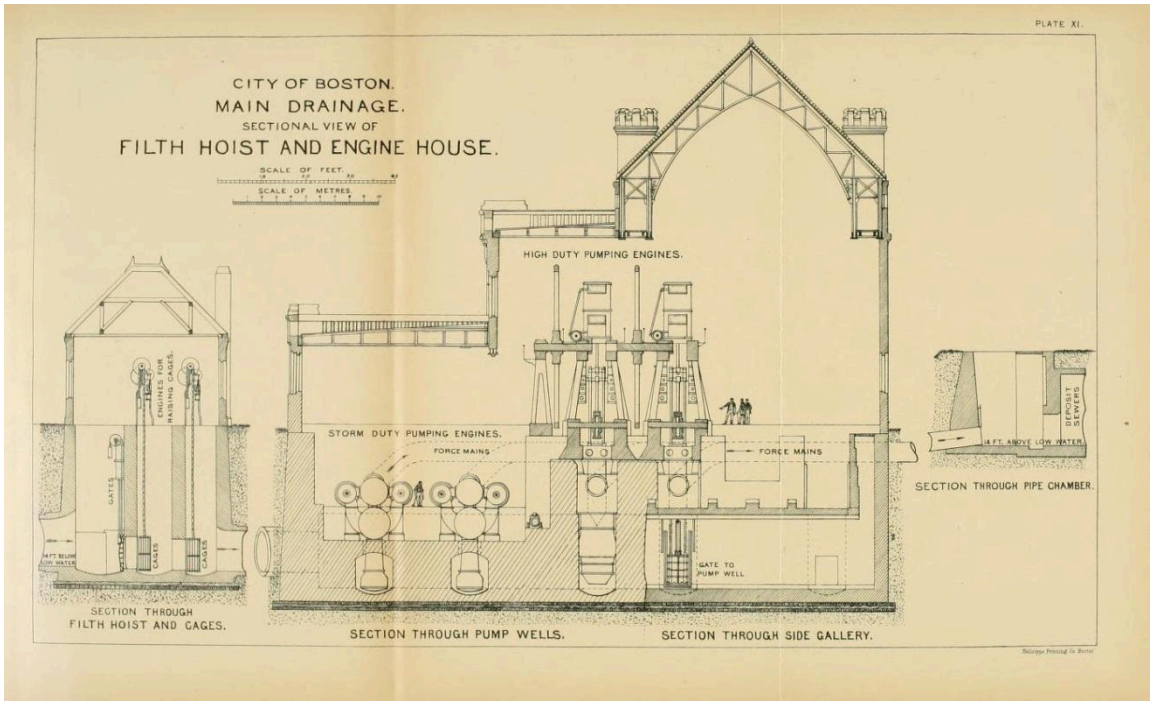

Figure 21. Pumping Station section
Source: Clarke, Eliot C. *Main Drainage Works of the City of Boston*. Boston: Rockwell & Churchill, 1888.

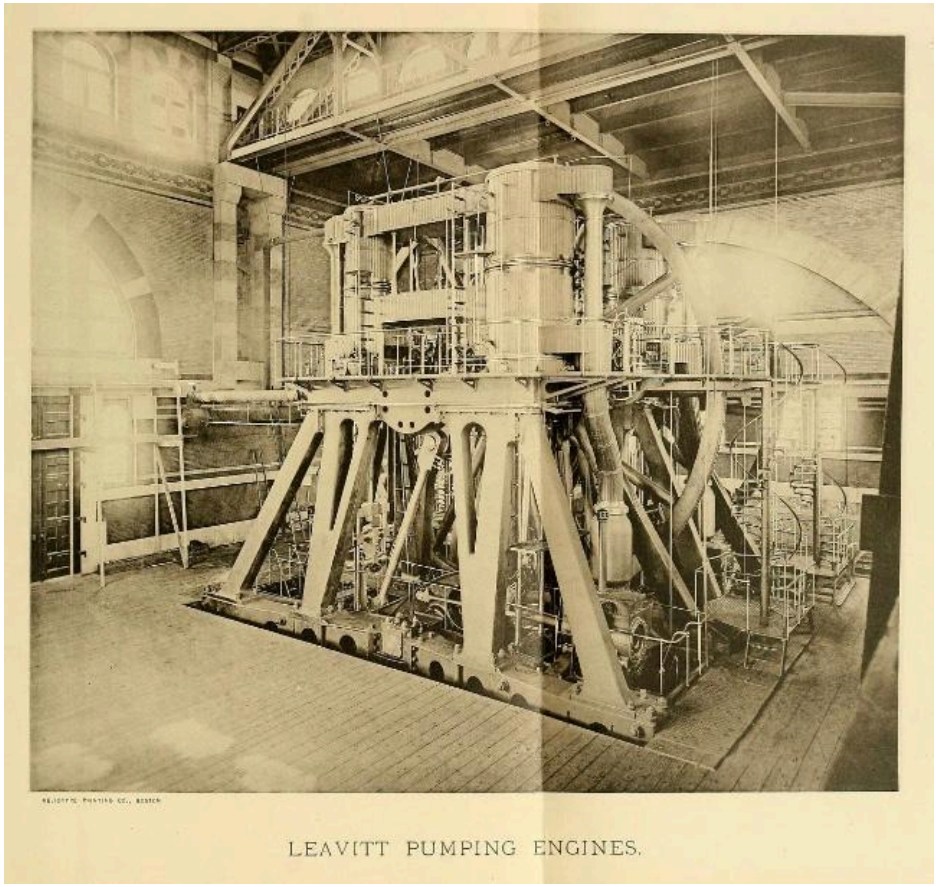

Figure 22. Leavitt Engine
Source: Clarke, Eliot C. *Main Drainage Works of the City of Boston*. Boston: Rockwell & Churchill, 1888.

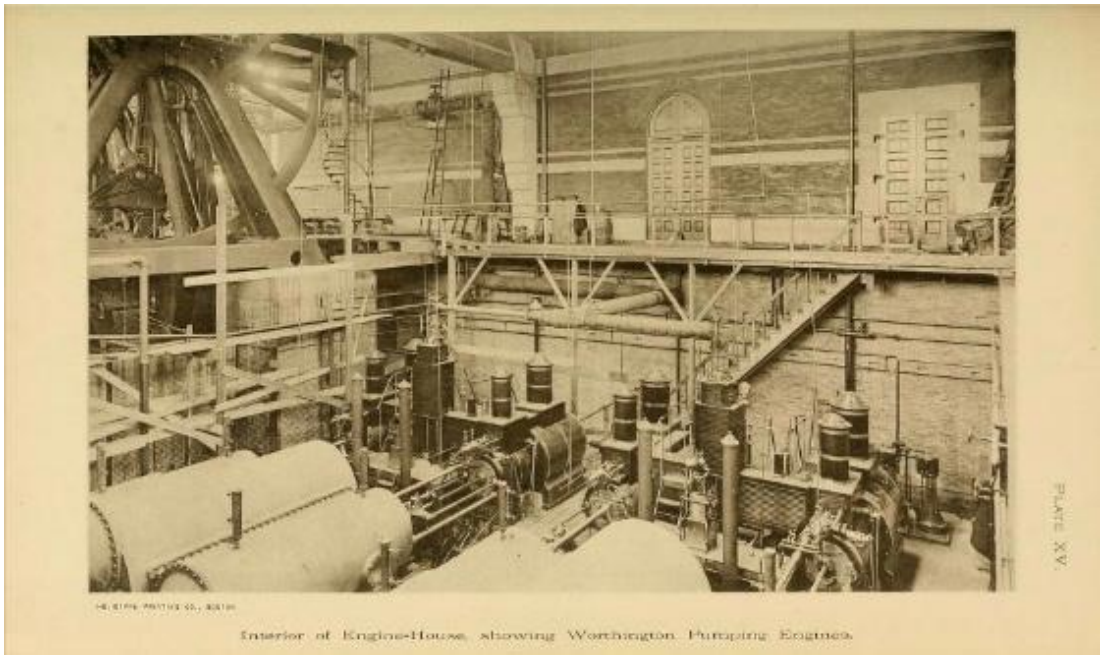

Figure 23. Worthington Engine
Source: Clarke, Eliot C. *Main Drainage Works of the City of Boston*. Boston: Rockwell & Churchill, 1888.

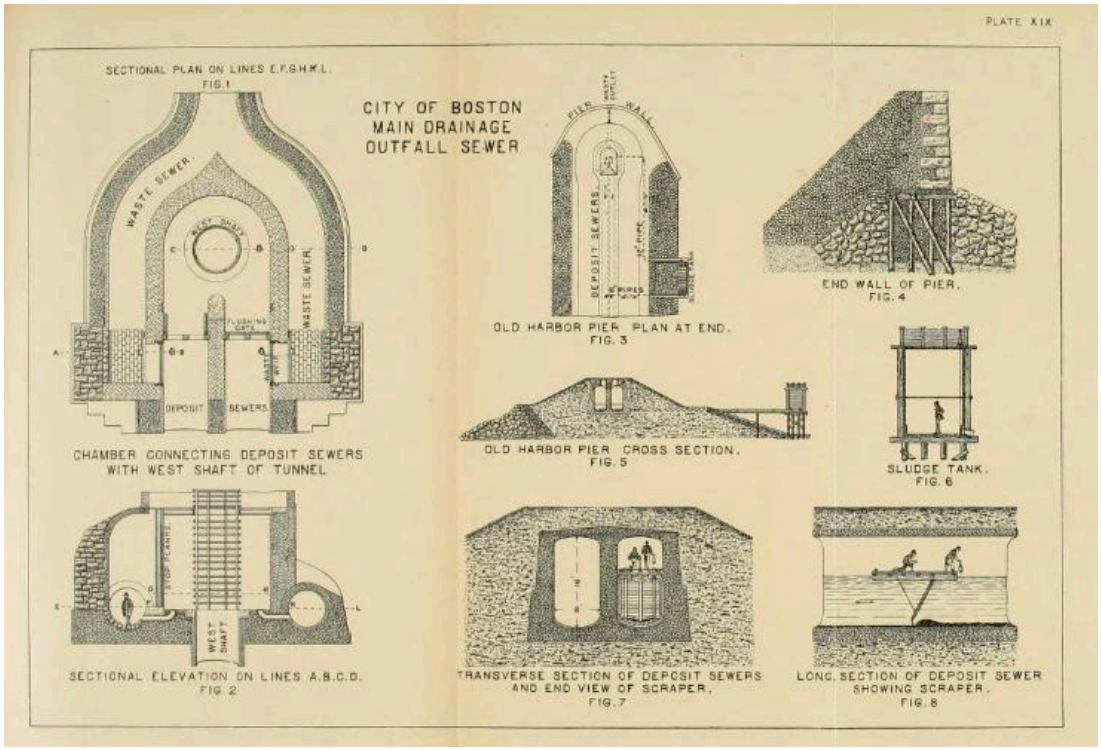

Figure 24. West Shaft Entrance
Source: Clarke, Eliot C. *Main Drainage Works of the City of Boston.* Boston: Rockwell & Churchill, 1888.

Figure 25. Aerial View, 1923
Source: Boston Landmarks Commission, courtesy of the Boston City Archives.

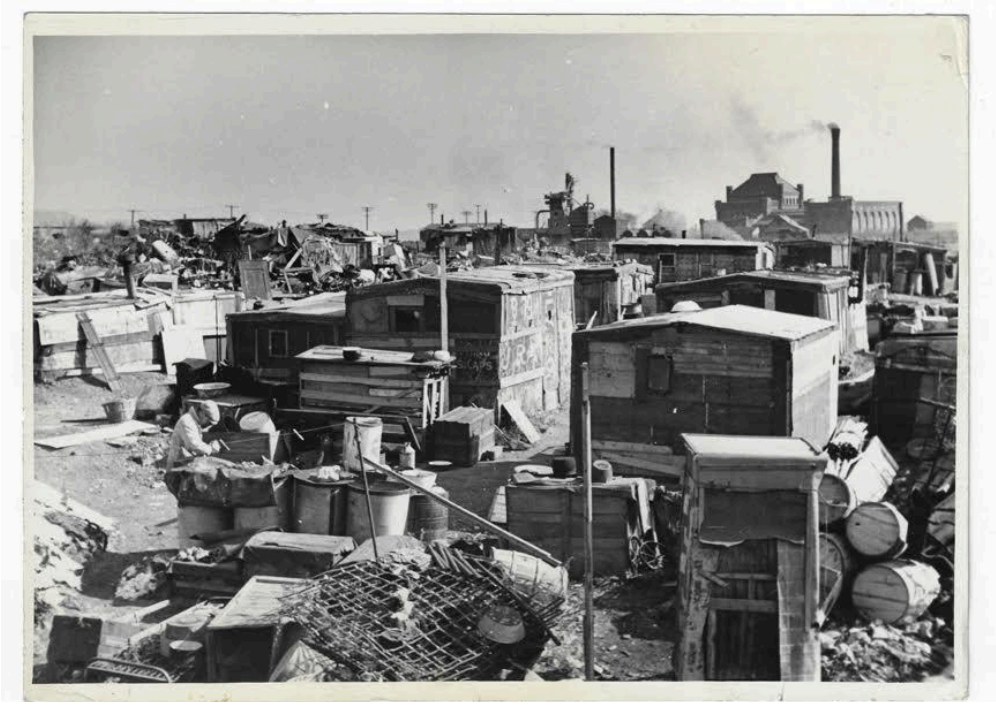

Figure 26. Mile Road Dump, 1937
Source: Harold Merrill, 1937, accessed via Dorchester Historical Society blog, https://www.dorchesterhistoricalsocietyblog.org/blog/3244/.

Figure 27. Aerial View, 1946
Source: UMass Boston, *Histories of the Calf Pasture Pumping Station*, 2013, https://blogs.umb.edu/pumpingstation/.

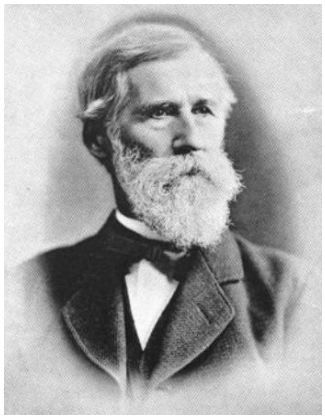

Figure 28. Ellis S. Chesbrough
Source: *Engineering News* Vol. 16 (July–December 188): 124–125.

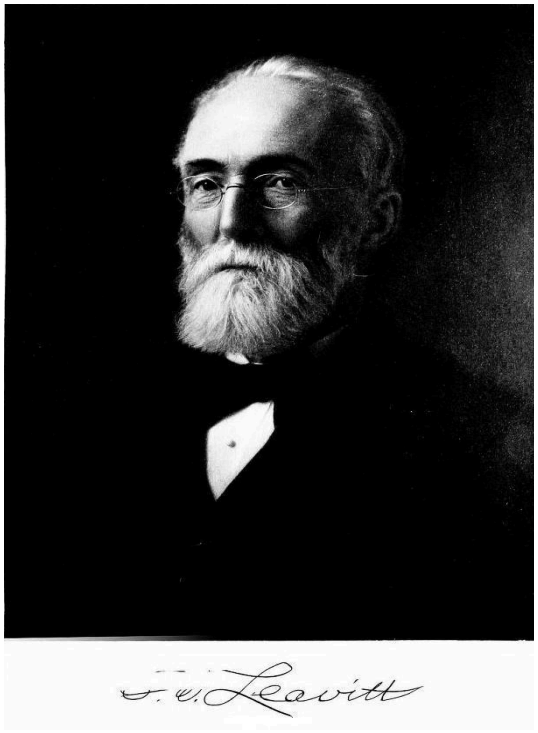

Figure 29. Erasmus D. Leavitt.
Source: Hutton, Frederick Remsen. *A History of the American Society of Mechanical Engineers from* 1880 to 1915. New York: The Society, 1915.

Figure 30. George A. Clough
Source: Eliot, S. *Biographical History of Massachusetts*, 1911.

3.0 SIGNIFICANCE

The Calf Pasture Pumping Station Complex is historically and architecturally significant at the local, regional, and national levels for its role in the development of a modern, innovative, and comprehensive sewerage system in Boston and as a model for cities nationwide; as an exemplar of late 19th century civic architecture; and as the work of Boston's first City Architect, George A. Clough, a prolific designer of public buildings. Largely intact and still dramatically prominent in the landscape, the Pumping Station Complex represents significant achievements in technology, social reform, and architectural design in the late 19th century.

3.1 Historic Significance

The Calf Pasture Pumping Station Complex stands on Columbia Point (formerly known as Old Harbor Point) in the Dorchester section of Boston. Native American trails connected the Shawmut peninsula, Columbia Point, and the South Shore, accompanied by dense prehistoric settlements, including a documented period site at nearby Savin Hill. Located two miles south of downtown Boston, Columbia Point now encompasses 350 acres of land projecting southeastward into Boston Harbor, between the South Boston peninsula on the north and the peninsula of Savin Hill on the south. Until the second half of the 19th century, the area was only 14 acres in size, largely open space, and used for grazing cattle.

In 1630, Savin Hill was the setting for the Massachusetts Bay Colony's first permanent English settlement in Dorchester, which was chosen for its easily defensible topography and abundant pasturage. The area was sparsely settled through the 18th and early 19th centuries until new residential development was launched by the nearby construction of the first seaside hotel in the Boston area, the Tuttle House, in 1822. Further development was encouraged by the Old Colony Railroad's construction of a new railroad line south from Boston in 1844. The Old Colony line passed just west of Columbia Point and Savin Hill, parallel to the South Boston Turnpike (Dorchester Avenue). What is now Columbia Point was a marshy, irregularly-shaped promontory, uninhabited and unattractive for development until construction began on Boston's new sewerage system in the 1870s.

The years between 1830 and 1915 represented a period of tremendous growth in Boston. Major changes in business, industry, and culture were fueled by a population increase (largely immigrants) from a little more than 60,000 in 1830 to over 141,000 in 1865—an increase of 235%. Between 1870 and 1915, Boston's population grew another 40%, to just over 196,000. By the fourth quarter of the 19th century, the strain on Boston's public health system was obvious, with the existing sewer system depositing raw sewage on the city's shoreline, where high tides failed to flush it away. The large areas of newly filled land surrounding the original Shawmut peninsula were often too low to drain at high tide; sewage was prone to accumulating in the sewers, and sewer gas often backed up into buildings. Noxious smells resulted, and deadly diseases such as cholera and typhoid were attributed to these conditions. The 1872 report of Boston's Board of Health observed that "large territories have been at once and frequently enveloped in an atmosphere of stench so strong as to arouse the sleeping, terrify the weak and nauseate and exasperate everybody."[1]

Boston's interceptor sewerage system represents an early effort in the public sanitation movement that arose internationally in the mid-19th century. Population growth, urbanization, and

[1] Quoted in Eliot C. Clarke, *Main Drainage Works of the City of Boston* (Boston: Rockwell & Churchill, 1888), 20.

industrialization required new technologies for providing essential services such as water supply and waste water disposal.

Privy vaults, cesspools, and limited and uncoordinated sewer conduits satisfied the needs of American cities up to the mid-19th century, but these systems were overwhelmed by rapid urban growth that began in the 1830s: America's urban population grew by more than 550% between 1830 and 1860, and the country's urban population increased three times as fast as the overall national population between 1820 and 1870. The piecemeal approach to waste disposal, moving household pollution to natural waters, was cheap and practical but unsustainable. Contamination of water supplies and frequent outbreaks of disease followed.

Through the early 19th century, responsibility for public health was shared between individuals and the government. By the mid-19th century, the scale of the problems and of the required solutions necessitated more governmental involvement and centralized management. Sanitarians and professional engineers became prominent in developing efficient and effective infrastructure improvements.

The public health movement of the 19th century established a vital connection between improved living conditions, public health, urban growth, and technological innovations. Emphasis was placed on prevention through state and local boards of health and a system of sanitary inspectors. A sanitary survey of Boston was undertaken in 1845; the Massachusetts State Board of Health was established in 1869; and Boston's permanent Board of Health was created in 1873.

Civil engineers provided the expertise to systematically and scientifically address challenging sewer and water needs with new technology. The Boston Society of Civil Engineers was established in 1848; the American Society of Civil Engineers was founded in 1852. American engineers often consulted with their European counterparts, who began sophisticated urban sewer systems earlier in the century. Chicago, Brooklyn, and Boston created the first planned sewer systems in the United States.

Initiated in 1875 and completed in 1884, the Boston Main Drainage Works, of which the Calf Pasture Pumping Station Complex was a part, was an innovative engineering project and the first extensive and coordinated sewerage project in the city's history. It played a vital role in improving public health and promoting growth in late 19th century Boston and was a model for urban sewer systems around the country. While Chicago and Brooklyn had earlier (1850s) comprehensively planned interceptor sewer systems, Boston's new interceptor system was distinguished for its metropolitan scale, diverting sewage from 18 cities and towns. An early 20th century history states that it was "the first great undertaking of the kind in this country, and gave its designer [Chesbrough] an international distinction as a sewerage specialist."[2]

Seasholes' history, *Gaining Ground: A History of Landmaking in Boston*, summarizes the impetus for and construction of the Calf Pasture Pumping Station complex as follows:

> In 1875, the mayor appointed a commission of experts (one of whom, Ellis S. Chesbrough, had been Boston's first city engineer in 1851-1855 and had since gained fame as the engineer of Chicago's sewerage system) to devise a new plan for Boston's sewage. The commissioners recommended in 1876 that a system of intercepting sewers be built around the margins of the city to receive the sewage from the existing sewers. The intercepting sewers would, in turn, empty into main sewers, which would carry the sewage to pumping stations where it would be raised about thirty feet and then flow by gravity into outfall sewers. The latter would convey the sewage to reservoirs located far from habitation where still untreated, the raw sewage would be discharged into the ocean during the first two or three hours of the ebb tide. The recommended point of discharge for the part of the city north

[2] Leonard Metcalf and Harrison P. Eddy, *American Sewerage Practice*, Vol. 1. (New York: McGraw-Hill, 1914), 15.

> of Charles River was Shirley Gut, the channel that then existed between Point Shirley in Winthrop and Deer Island, and, for the part of the city south of the Charles, the north end of Moon Island.
>
> Subsequent committees soon decided that the south part of the system should be built first. Both Commercial Point and Old Harbor Point at the end of the Calf Pasture were considered as possible locations for the pumping station and the beginning of the outfall sewer. The Calf Pasture was finally chosen because construction would cost less, even though it would involve building a mile-and-a-third-long tunnel through bedrock under the harbor between Old Harbor Point and Squantum Neck.
>
> Work on the Old Harbor [Calf Pasture] pumping station began in 1879. As part of the project, facilities were provided for coal ships to dock at the end of the original Calf Pasture—a dock was dredged, stone seawalls constructed, and a wharf built in front of one seawall. More landmaking occurred when a long pier was built out from the original shoreline to support and protect the sewer running from the pumping station to the shaft that descended 160 feet to the tunnel that would carry sewage to Squantum Neck. (From Squantum a causeway, which still exists, was built to carry the sewer to Moon Island.) An 1880 map shows this long pier as well as the dock and its adjacent seawalls.... A horseshoe-shaped brick gatehouse, constructed at the end of the pier over the opening of the shaft, still survives near the shore on the harbor side of the road leading to the Kennedy Library. The massive dark gray granite pumping station with its crenellated towers, designed by George Albert Clough, the city architect, and reportedly built with blocks from the Beacon Hill Reservoir, which was then being dismantled, also still looms between the library and the UMass/Boston campus.... As part of the sewer project, Mt. Vernon Street was extended from the Old Colony Railroad, now the MBTA Red Line tracks to the pumping station.... To make this street, which ran on top of the sewer line, the marsh was filled with gravel to grade 16.5, or 16.5 feet above mean low water. The Main Drainage, as the new sewerage system came to be called, went into operation on January 1, 1884.[3]

In 1875, Mayor Samuel C. Cobb (1826-1891; served three terms as mayor, from 1874 through 1876) appointed a commission of three eminent authorities (two civil engineers and one expert on sanitary science) to evaluate the city's current sewerage conditions and to develop a plan for improved sewerage. The appointees were Ellis S. Chesbrough, City Engineer for Chicago; Moses Lane, City Engineer for Milwaukee; and Dr. Charles F. Folsom of Boston, Secretary of the Massachusetts State Board of Health. Chesbrough (1813-1886) was one of the country's pre-eminent experts on water supply and sewer infrastructure (see page 26). Lane (1823-1882) had worked in partnership with Chesbrough on plans for a public water supply for Pittsburgh; he was also instrumental in developing waterworks for Memphis, New Orleans, and Kansas City. A specialist in hygiene, public health, and mental health, Folsom (1842-1907) "was the energetic secretary of the Massachusetts State Board of Health"[4] and a member of Massachusetts' first Metropolitan Sewer Commission, established in 1885.

Boston's City Engineer, Joseph P. Davis (1837 – 1917), had worked under both Chesbrough and the Scottish-born civil engineer James Kirkwood, who was distinguished as chief engineer of the acclaimed Brooklyn waterworks and sewer system. Davis was sent to Europe in 1876 to study best engineering practices employed abroad, visiting London, Stratford, Birmingham, Bedford, Crewe, and Leeds in England, and Paris and Danzig on the continent. Conditions were documented in ten other cities in Europe, as well as in New York, Brooklyn, Philadelphia, Baltimore, and Washington, D. C. in the United States. The commission's report recommended an intercepting system consisting of four main parts **(Figure 16)**: a network of intercepting sewers around the city that take waste from existing sewer pipes and feed a main sewer that leads to the pumping station; the pumping station, where sewage is elevated about 35 feet; an outfall sewer that takes the sewage from the Pumping

[3] Nancy A. Seasholes, *Gaining Ground*; A *History of Landmaking in Boston* (Cambridge, Mass.: MIT Press, 2003), 337-338.
[4] Metcalf and Eddy, 15.

Station to Moon Island; and a reservoir at Moon Island, where sewage is stored and emptied into the harbor with the outgoing tide. The cost of the new, city-wide sewerage system was more than $6.5 million.

Nearing completion of the system at the end of 1883, Alderman Lucius Slade, the chairman of the Committee on Improved Sewerage, announced that:

> Next to the waterworks, the system of sewerage which we put into operation to-morrow is the most important public work ever undertaken in this city, both as regards its magnitude and the purpose it is intended to accomplish. It is the only work of its kind on this continent, and if it succeeds, as I believe it will, in removing the evils from which we have so long suffered, it cannot fail to prove a great benefit to the community.[5]

The present Pumping Station, Gate House/Filth Hoist, and West Shaft Entrance buildings were all part of the original construction of the Calf Pasture Pumping Station Complex, designed by City Architect George A. Clough **(Figures 17, 18, 19)**. The Pumping Station comprised an Engine House at the north part of the building, a Coal House at the south, and a Boiler House in the center. Large objects in the incoming effluent that were likely to damage the pumps were removed at the Gate House/Filth Hoist, just to the west of the Pumping Station. The Gate House/Filth Hoist contained a set of four minor engines and pumps for raising and lowering the filth cages inside, as well as gates that controlled the flow of sewage into the Pumping Station.

While intended eventually to house eight pumping engines with boilers, the Engine House as originally constructed (the three westernmost volumes; **Figure 17**) contained two expensive, high-duty Leavitt engines for continuous work, standing in the taller, two- and three-story volumes, and two less expensive Worthington engines employed for storm service in the one-story wing to the northwest. The Leavitt engines **(Figure 22)**, the world's largest at the time, consisted of compound beam and fly-wheel engines with two single-acting plunger pumps; the cylinders were unconventionally located on top of the engines. The fly-wheel diameter was an enormous 36 feet; each fly-wheel weighed 72.5 tons; and were capable of pumping 25 million gallons per day. The Leavitt engines were specified by City Engineer Joseph Davis; designed by Erasmus D. Leavitt, Jr., of Cambridgeport, Mass.; and built by Quintard Iron Works of New York. Their cost was $115,000 each.

The Worthington engines **(Figure 23)**, designed and built by the New York firm of Henry R. Worthington, consisted of duplex, compound condensing engines; they cost $45,000 each. Steam for the four engines was provided by four steel boilers built by Kendall & Roberts of Cambridge. The Coal House was originally attached to the south end of the Boiler House, parallel to the Engine House; it measured 129 feet by 59.5 feet inside and contained six coal bins capable of storing about 3,000 tons of coal. The total cost of construction for the Pumping Station building was approximately $300,000.

The sewer lines taking effluent out of the Pumping Station connected to an underground tunnel that carried sewage from Calf Pasture to Moon Island (in Quincy, MA) at a shaft chamber on the water's edge. The West Shaft Entrance was built above this chamber and provided access to a pair of underground tunnels in the outfall sewer. The tunnels are each 16 feet high and eight feet wide; deposits that settled at the bottom were cleaned out with scrapers by workmen on barges **(Figure 24)**.

Existing documentation indicates that the Pumping Station building was expanded as originally intended ca. 1904-1905, with one- and two-story sections extending to the east of the three-story

[5] Clarke, 180.

volume. During the late 19th and early 20th centuries, the Complex also included a wood-frame trestle connecting the Boiler House with the pier where coal was unloaded, as well as numerous utilitarian, wood-frame buildings used for offices, sheds, storage, and dwellings for pumping station employees. None of these are extant **(Figure 25)**.

During the middle of the 20th century, land surrounding the Pumping Station Complex was used as a private dump, known as the Mile Road Dump, by the Coleman Disposal Company; a "Hooverville" shanty town was documented here during the Great Depression **(Figure 26)**.

In 1940, one of the Leavitt pumps cracked; both the Leavitt and Worthington pumps were dismantled and removed, and the system was changed from steam power to electric power. The roof of the Coal House collapsed in 1946, and the wing was subsequently demolished **(Figure 27).** The Calf Pasture Pumping Station Complex remained in active use, handling all of the city's sewage, until 1968, when a new sewage treatment plant was constructed on Deer Island, at the northern end of Boston Harbor. For several decades, the Calf Pasture Complex was used as back-up for the Deer Island plant during heavy storms; the buildings are presently vacant and unused. The original machinery has been removed from the Pumping Station but reportedly remains in the Gate House/Filth Hoist. In 1970, construction began on UMass Boston, whose campus now surrounds the Pumping Station Complex and which now owns the Pumping Station property.

The Calf Pasture Pumping Station Complex is one of several outstanding examples of public infrastructure and civic improvements during Boston's "Golden Age" of development, growth, and prosperity in the late 19th and early 20th centuries. The Chestnut Hill Reservoir and Pumping Stations Complex in Brighton represents a comparable combination of engineering, technology, and public architecture. Two high style buildings, the High Service Pumping Station (1887-1888; by architect Arthur H. Vinal, who was also the City Architect from 1884-1888, following George Clough) and the Low Service Pumping Station (1898-1901; by architects Shepley, Rutan and Coolidge) were built at the Chestnut Hill Reservoir (1865-1870) to augment the municipal water supply for Boston's rapidly growing population. The Chestnut Hill waterworks included a Leavitt pumping engine installed in 1894 (the only known surviving example, now a National Historic Mechanical Engineering Landmark) and a Worthington-Snow engine installed in 1922.

Ellis Sylvester Chesbrough (1813-1886)
Ellis Sylvester Chesbrough was the head of the commission assembled to investigate the state of sewerage in Boston. Born in Baltimore, Chesbrough **(Figure 28)** began his professional career as a surveyor and engineer with several railroad companies. In 1846, he was appointed chief engineer of the Western Division (Cochituate-Brookline) of Boston's new waterworks system, becoming commissioner of the city's water department in 1850. In 1851, he was named Boston's City Engineer. Chesbrough left Boston for Chicago in 1855, serving first as Chief Engineer there; he was appointed Chief Engineer of Chicago's new Board of Public Works in 1861 and Commissioner of Public works in 1879. In Chicago, Chesbrough was responsible for the design and construction of a bold, comprehensive, and integrated water and sewer system. Based on the interceptor model, Chicago boasted, "the premier sewerage system of the time, capturing the imagination of the public health and engineering communities…"[6] In 1879, Chesbrough left office in Chicago "with a national reputation on urban water and sewer issues;"[7] he continued work as a consultant on water systems

[6] Martin V. Melosi, *The Sanitary City: Environmental Services in urban American from Colonial Times to the Present* (Pittsburgh: University of Pittsburgh Press, 2008), 65.
[7] American Society of Civil Engineers, "Ellis Sylvester Chesbrough," https://www.asce.org/emplates/person-bio-detail.aspx?id=996.

for Boston, Chattanooga, Des Moines, Dubuque, Memphis, New Haven, Peoria, Providence, New York, and Toronto.

Erasmus Darwin Leavitt, Jr. (1836-1916)
Leavitt **(Figure 29)**, the designer of two engines in the Calf Pasture Pumping Station, was born in Lowell, Mass., educated in the public schools there, and was employed by a variety of steam engineering manufacturing firms before the Civil War. During the war, he was involved in ship construction and taught steam engineering at the U.S. Naval Academy. Leavitt established his own mechanical engineering practice in 1867, contributing innovative engineering design to numerous cities (including Boston, Cambridge, and Louisville, Kentucky) and manufacturing companies, most notably the Calumet & Hecla Mining Company, where he served as consulting engineer for thirty years, from 1875 to 1904. Leavitt's outstanding projects include the design of heavy pumping machinery for Calumet & Hecla, engines for a cable railway at the Brookline Bridge, and large water and sewage pumping engines for the cities of Louisville, Boston, and Cambridge. His Leavitt-Riedler Pumping Engine (1894) in the Chestnut Hill High Service Pumping Station in Boston, recognized as a National Historic Mechanical Engineering Landmark in 1973, was applauded as "the most efficient pumping engine in the world" in contemporary professional publications.[8]

Leavitt was a fellow of the American Academy of Arts and Sciences and a founding member of the American Society of Mechanical Engineers (ASME), where he served as Vice President and President. Retiring from active practice in 1904, "[h]is life was one of close application to his chosen profession, and he occupied a leading position among the most eminent engineers of this country and Europe. During his many trips abroad, he received marked attention from engineers and from various engineering societies."[9] National recognition is evident in the encomium of the ASME, which at his death noted that "[n]o mechanical engineer has left for our contemplation more impressive monuments of human skill than he… He did more than any other engineer in this country to establish sound principles and propriety of design. He appreciated the importance of directness and the absence of ornamentation in strictly utilitarian designs, and he firmly believed that beauty in machine design came from propriety."[10] Leavitt was a resident of Cambridge, Mass., and is buried in Cambridge Cemetery there.

Henry R. Worthington (1817-1880)
Worthington, the designer of two engines in the Calf Pasture Pumping Station, was born in Brooklyn, New York, and was educated at public schools there. He began his engineering career by creating an innovative pump for steam canal boats on the Erie Canal that operated independently and automatically from the boat engine. He was in partnership with William H. Baker from 1845 to 1860, building steam pumps and pumping engines. In 1859, Worthington advanced a duplex steam feed pump, followed by the first water-works engine in 1860. Reliable and inexpensive to maintain, the pump was adopted by 80 municipalities in the United States by 1880.

Worthington's firm evolved into Worthington Hydraulic Pump Works in 1862 and was employed by the U.S. Navy during the Civil War to design bilge pumps for Union ships. Charles C. Worthington succeeded to the presidency of the company in 1880 and continued to make advancements to pumps, compressors, and related machinery. In 1885, the company provided high-pressure pumps to

[8] Michael MacRae, for the American Society of Mechanical Engineers, "Erasmus Darwin Leavitt, Jr.", June 2012, www.asme.org/engineering-topics/articles/energy/erasmus-darwin-leavitt-jr/.
[9] Cambridge Historical Society, *Publications* XI; *Proceedings* (Cambridge, Mass.: Published by the Society, 1920), 87.
[10] MacRae, "Erasmus Darwin Leavitt, Jr."

deliver water to the British Expeditionary Army in Khartoum, Sudan, and in 1889 provided an engine and steam pumps used in the construction of the Eiffel Tower.

In 1899, the Worthington Pump Works was merged into the International Steam Pump Company (ISPC), owned by industrialist Benjamin Guggenheim. After numerous mergers and acquisitions in the 20th century, the company is still in business producing engines and pumps under the Worthington Compressor Services name.

George A. Clough (1843-1916)
The architect of the Calf Pasture Pumping Station, George A. Clough **(Figure 30),** was born in Maine; he studied at Blue Hill Academy and afterward worked as a draftsman for his father, who was a shipbuilder. In 1863, he moved to Boston and trained in the architectural firm of Snell and Gregerson before starting his own practice in 1869. Clough was appointed the first City Architect of Boston in 1874; over the next ten years in that position, he was responsible for the design, construction, and renovation of numerous significant public buildings, including the Boston Latin and English High Schools, Suffolk County Courthouse, Congress Street Fire Station, and the Prince School in the Back Bay, as well as the Calf Pasture Pumping Station complex in Dorchester. He also submitted plans for the new Boston Public Library building in 1880 (the building was ultimately designed by McKim, Mead & White). He supervised the restoration of the Old State House in 1880-1881.

After his tenure as City Architect, Clough returned to private practice, first on his own and from 1902 in partnership with Herbert L. Wardner, as Clough & Wardner. His prolific career included 85 school buildings in Maine, Massachusetts, New York, and Pennsylvania; the Soldiers' Home in Chelsea, Mass.; several churches, among them St. Mark Methodist Church in Brookline, Gate of Heaven Roman Catholic Church in South Boston, and St Patrick's Church in Chelsea; the Somerville Police Station; Curtis Hall and Goddard Hall on the Tufts University campus; and many residences in the Boston area and in his hometown of Blue Hill, Maine.

3.2 Architectural Significance

The Calf Pasture Pumping Station Complex is an excellent example of Richardsonian Romanesque municipal design in the Boston area, displaying a monumental scale, grand materials, and sophisticated composition and detailing that are remarkable on industrial buildings. The Richardsonian Romanesque style was particularly well suited to public architecture, conveying strength, solidity, and grandeur. The Pumping Station Complex buildings are distinguished by their hip roofs, granite block walls and trim, round-arched windows and doorways, and decorative roof edges.

Representing the only 19th century structures standing on Columbia Point, the Calf Pasture Pumping Station Complex is a striking marker of the transformation of Boston from an agricultural community to an industrialized and densely populated urban center over three centuries. Castle-like in appearance, the Pumping Station is an ample and carefully crafted building, while the compact and restrained form of the nearby Gate House/Filth Hoist is boldly detailed. The modestly-scaled West Shaft Entrance is distinguished by a curved building end and lively ornamentation of wall surfaces and fenestration. Despite being vacant for some time, the buildings remain substantially intact as of the time of the drafting of this report.

3.3 Archaeological Sensitivity

Though much of the parcel has been heavily disturbed in the process of constructing the Calf Pasture Pumping Station and, more recently, UMass Boston's Parking Lot D, the potential for the preservation of archaeological resources remains. The underground infrastructure of the Calf Pasture Pumping Station and associated structures and landscape contribute greatly to the

historical significance of the place. Additionally, most of the parcel upon which it sits was part of the existing 1630 land, not built land. The area's proximity to a former resource-rich wetland, the Atlantic Ocean, and proximity to an ancient Native sacred site near Savin Hill (0.7 miles or 1135.6 meters away) as well as the archaeologically-significant Boston Harbor Islands, make it sensitive for both ancient Native and historical archaeology.

Below-ground impacts to the buildings and landscape shall be avoided if possible within the landmark-designated area. All proposed below-ground impacts to the landscape, temporary or permanent, shall be reviewed by the staff archaeologists of the City Archaeology Program or City Archaeologist to determine if significant historic archaeological resources may or will be negatively impacted by below-ground work. If impacts may or do exist, and they can not be avoided, mitigation in the form of archaeological monitoring, excavations, or other documentation may be required based on the recommendations and consultation of the City Archaeologist. All archaeological work on the Calf Pasture Pumping Station and associated structures and landscape shall be conducted under a state-issued State Archaeological Permit by an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology.

3.4 Relationship to Criteria for Landmark Designation

The Calf Pasture Pumping Station Complex meets the criteria for Landmark designation found in section four of Chapter 772 of the Acts of 1975, as amended, with local, regional, and national levels of significance, under the following criteria:

A. ***Inclusion in the National Register of Historic Places as provided in the National Historic Preservation Act of 1966.***
The Calf Pasture Pumping Station Complex is listed on the National Register of Historic Places (BOS. IP, 1990). The three contributing buildings meet criteria A and C of the National Register of Historic Places with significance at the local level. Designed by and partially built by Boston City Architect Albert George Clough in the Richardsonian Romanesque style, it was part of the first comprehensive sewerage project in Boston initiated in 1875 and completed in 1884.

B. ***Structures, sites, objects, man-made or natural, at which events occurred that have made an outstanding contribution to, and are identified prominently with, or which best represent some important aspect of the cultural, political, economic, military, or social history of the city, the commonwealth, the New England region or the nation.***
The Calf Pasture Pumping Station was an integral part of the first comprehensive sewerage project in the city of Boston. First initiated in 1875 and completed in 1884, the Boston Main Drainage System was the first extensive and successful sewerage project in the city's history, and played a vital role in improving public health in late-19th-century Boston. The intercepting sewerage system of Boston was the first great undertaking of its kind in the country, and gave its designers international distinction as sewerage specialists.

C. ***Structures, sites, objects, man-made or natural, representative of elements of architectural or landscape design or craftsmanship which embody distinctive characteristics of a type inherently valuable for study of a period, style or method of construction or development, or a notable work of an architect, landscape architect, designer, or building whose work influenced the development of the city, the commonwealth, the New England region, or the nation.***
The Calf Pasture Pumping Station Complex is historically and architecturally significant at the local, regional, and national levels for its role in the development of a modern, innovative, and comprehensive sewerage system in Boston and as a model for cities nationwide; as an

exemplar of late 19th century civic architecture; and as the work of Boston's first City Architect, George A. Clough, a prolific designer of public buildings. The Calf Pasture Pumping Station Complex is an excellent example of Richardsonian Romanesque municipal design in the Boston area, displaying a monumental scale, grand materials, and sophisticated composition and detailing that are remarkable on industrial buildings. The Richardsonian Romanesque style was particularly well suited to public architecture, conveying strength, solidity, and grandeur. Largely intact and still dramatically prominent in the landscape, the Pumping Station Complex represents significant achievements in technology, social reform, and architectural design in the late 19th century. It played a vital role in improving public health and promoting growth in late 19th century Boston and was a model for urban sewer systems around the country.

George A. Clough was appointed the first City Architect of Boston in 1874; during his tenure, he was responsible for the design, construction, and renovation of numerous significant public buildings, including the Boston Latin and English High Schools (no longer extant), Suffolk County Courthouse (BOS.1945, 1974), Congress Street Fire Station (BOS.ZG, 2008), and the Prince School in the Back Bay (BOS.BW, 1966), as well as the Calf Pasture Pumping Station complex in Dorchester (BOS.IP, 1990). He also supervised restoration of the Old State House in 1880-1881 (BOS.2107, 1966, 1994).

After his tenure as City Architect, Clough returned to private practice, first on his own and from 1902 in partnership with Herbert L. Wardner, as Clough & Wardner. His prolific career included 85 school buildings in Maine, Massachusetts, New York, and Pennsylvania; the Soldiers' Home in Chelsea, Mass.; several churches, among them St. Mark Methodist Church in Brookline, Gate of Heaven Roman Catholic Church in South Boston, and St Patrick's Church in Chelsea; the Somerville Police Station; Curtis Hall and Goddard Hall on the Tufts University campus; and many residences in the Boston area and in his hometown of Blue Hill, Maine.

4.0 ECONOMIC STATUS

4.1 Current Assessed Value

According to the City of Boston's Assessor's Records, the property at 435 Mount Vernon Street (parcel # 1303413000), where the Calf Pasture Pumping Station and Gate House/Filth Hoist buildings are located, has a total assessed value in 2023 of $4,651,400.00, with the land valued at $2,780,000.00 and the buildings valued at $1,871,400.00. It should be noted that there are other buildings on the parcel that are not being considered for Landmark designation.

According to the City of Boston's Assessor's Records, the property at 200 William T. Morrissey Boulevard (parcel #1303400000), where the West Shaft Entrance building is located, has a total assessed value in 2023 of $798,425,000.00 with the land valued at $418,261,900.00 and the building valued at $380,163,100.00. It should be noted that there are other buildings on the parcel that are not being considered for Landmark designation.

4.2 Current Ownership

Commonwealth of Massachusetts – UMass Boston

5.0 PLANNING CONTEXT

5.1 Background

Since its construction in 1883, the Calf Pasture Pumping Station Complex served as a significant public sewerage system continuously until it ceased operation in 1968 when the Deer Island Sewage Treatment Plant was opened. Since that time, the buildings have remained vacant.

5.2 Zoning

Parcel numbers #1303413000 and #1303400000 are located in the Dorchester Neighborhood zoning district, a Community Facility subdistrict, and the following overlay districts: Greenbelt Protection and Parking Restricted.

5.3 Planning Issues

The Calf Pasture Pumping Station Complex remained in active use, handling all of the city's sewage, until 1968, when a new sewage treatment plant was constructed on Deer Island, at the northern end of Boston Harbor. In 1970, construction began on UMass Boston, whose campus now surrounds the Pumping Station Complex and which now owns the Pumping Station property. For several decades, the Calf Pasture Complex was used as back-up for the Deer Island plant during heavy storms; the buildings are presently vacant. The Calf Pasture Pumping Station Complex was listed on the National Register of Historic Places (BOS. IP) in 1990.

On August 29, 2018, a petition was submitted to Landmark the Calf Pasture Pumping Station Complex. At the October 9, 2018 public hearing the Boston Landmarks Commission voted to accept the petition for further study.

6.0 ALTERNATIVE APPROACHES

6.1 Alternatives available to the Boston Landmarks Commission:

A. Individual Landmark Designation

The Commission retains the option of designating the Calf Pasture Pumping Station Complex as a Landmark. Designation shall correspond to Assessor's parcels 1303413000 and 1303400000 and shall address the following exterior elements hereinafter referred to as the "Specified Exterior Features":

- The exterior envelope of the Pumping Station, the Gate House/Filth Hoist, and the West Shaft Entrance

B. Denial of Individual Landmark Designation

The Commission retains the option of not designating any or all of the Specified Exterior Features as a Landmark.

C. Preservation Plan

The Commission could recommend development and implementation of a preservation plan for the property.

D. Site Interpretation

The Commission could recommend that the owner develop and install historical interpretive materials at the site.

6.2 Impact of Alternatives:

A. Individual Landmark Designation
Landmark designation under Chapter 772 would require a review of physical changes to Calf Pasture Pumping Station Complex in accordance with the Standards and Criteria adopted as part of the designation.

B. Denial of Individual Landmark Designation
Without Landmark designation, the City would be unable to offer protection to the Specified Exterior Features or extend guidance to the owners under Chapter 772.

The Calf Pasture Pumping Station Complex is listed individually on the National Register of Historic Places. Listing on the National Register provides an honorary designation and limited protection from federal, federally funded, or federally assisted activities. It creates incentives for preservation, notably the federal investment tax credits and grants through the Massachusetts Preservation Projects Fund (MPPF) from the Massachusetts Historical Commission. National Register listing automatically leads to listing on the State Register, affording parallel protection for projects with state involvement and also the availability of state tax credits. However, National Register listing does not provide any design review for changes undertaken by private owners at their own expense.

C. Preservation Plan
A preservation plan allows an owner to work with interested parties to investigate various adaptive use scenarios, analyze investment costs and rates of return, and provide recommendations for subsequent development. It does not carry regulatory oversight.

D. Site Interpretation
A comprehensive interpretation of the history and significance of Calf Pasture Pumping Station Complex could be introduced at the site.

7.0 RECOMMENDATIONS

Staff of the Boston Landmarks Commission makes the following recommendations:

1. That the Calf Pasture Pumping Station Complex be designated by the Boston Landmarks Commission as a Boston Landmark, under Chapter 772 of the Acts of 1975, as amended (see Section 3.4 for Relationship to Criteria for Landmark designation);

2. That the boundaries of the Landmark corresponding to Assessor's parcel 130341300 and 130340000 be adopted with the following modification: that the exteriors of the buildings described in this study report (the Pumping Station, the Gate House/Filth Hoist, and the West Shaft Entrance) are the only ones on the corresponding Assessor's parcels to be designated as Landmarks;

3. And that the attached Standards and Criteria recommended by the staff of the Boston Landmarks Commission be accepted.

8.0 GENERAL STANDARDS AND CRITERIA

8.1 Introduction

Per sections, 4, 5, 6, 7 and 8 of the enabling statute (Chapter 772 of the Acts of 1975 of the Commonwealth of Massachusetts, as amended) Standards and Criteria must be adopted for each Landmark Designation which shall be applied by the Commission in evaluating proposed changes to the property. The Standards and Criteria both identify and establish guidelines for those features which must be preserved and/or enhanced to maintain the viability of the Landmark Designation. Before a Certificate of Design Approval or Certificate of Exemption can be issued for such changes, the changes must be reviewed by the Commission with regard to their conformance to the purpose of the statute.

The intent of these guidelines is to help local officials, designers and individual property owners to identify the characteristics that have led to designation, and thus to identify the limitation to the changes that can be made to them. It should be emphasized that conformance to the Standards and Criteria alone does not necessarily ensure approval, nor are they absolute, but any request for variance from them must demonstrate the reason for, and advantages gained by, such variance. The Commission's Certificate of Design Approval is only granted after careful review of each application and public hearing, in accordance with the statute.

As intended by the statute, a wide variety of buildings and features are included within the area open to Landmark Designation, and an equally wide range exists in the latitude allowed for change. Some properties of truly exceptional architectural and/or historical value will permit only the most minor modifications, while for some others the Commission encourages changes and additions with a contemporary approach, consistent with the properties' existing features and changed uses.

In general, the intent of the Standards and Criteria is to preserve existing qualities that engender designation of a property; however, in some cases they have been structured as to encourage the removal of additions that have lessened the integrity of the property. It is recognized that changes will be required in designated properties for a wide variety of reasons, not all of which are under the complete control of the Commission or the owners. Primary examples are: Building code conformance and safety requirements; Changes necessitated by the introduction of modern mechanical and electrical systems; Changes due to proposed new uses of a property.

The response to these requirements may, in some cases, present conflicts with the Standards and Criteria for a particular property. The Commission's evaluation of an application will be based upon the degree to which such changes are in harmony with the character of the property. In some cases, priorities have been assigned within the Standards and Criteria as an aid to property owners in identifying the most critical design features. The treatments outlined below are listed in hierarchical order from least amount of intervention to the greatest amount of intervention. The owner, manager or developer should follow them in order to ensure a successful project that is sensitive to the historic Landmark.

- **Identify, Retain, and Preserve** the form and detailing of the materials and features that define the historic character of the structure or site. These are basic treatments that should prevent actions that may cause the diminution or loss of the structures' or site's historic character. It is important to remember that loss of character can be caused by the cumulative effect of insensitive actions whether large or small.

- **Protect and Maintain** the materials and features that have been identified as important and must be retained during the rehabilitation work. Protection usually involves the least amount of intervention and is done before other work.
- **Repair** the character defining features and materials when it is necessary. Repairing begins with the least amount of intervention as possible. Patching, piecing-in, splicing, consolidating or otherwise reinforcing according to recognized preservation methods are the techniques that should be followed. Repairing may also include limited replacement in kind of extremely deteriorated or missing parts of features. Replacements should be based on surviving prototypes.
- **Replacement** of entire character defining features or materials follows repair when the deterioration prevents repair. The essential form and detailing should still be evident so that the physical evidence can be used to re-establish the feature. The preferred option is replacement of the entire feature in kind using the same material. Because this approach may not always be technically or economically feasible the commission will consider the use of compatible substitute material. The commission does not recommend removal and replacement with new material any feature that could be repaired.
- **Missing Historic Features** should be replaced with new features that are based on adequate historical, pictorial and physical documentation. The commission may consider a replacement feature that is compatible with the remaining character defining features. The new design should match the scale, size, and material of the historic feature.
- **Alterations or Additions** that may be needed to assure the continued use of the historic structure or site should not radically change, obscure or destroy character defining spaces, materials, features or finishes. The commission encourages new uses that are compatible with the historic structure or site and that do not require major alterations or additions.

In these guidelines the verb "**should"** indicates a recommended course of action; the verb "**shall"** indicates those actions which are specifically required to preserve and protect significant architectural elements.

Finally, the Standards and Criteria have been divided into two levels:

Section 8.3: Those general Standards and Criteria that are common to all Landmark designations (building exteriors, building interiors, landscape features and archeological sites).

Section 9.0: Those specific Standards and Criteria that apply to each particular property that is designated. In every case the Specific Standards and Criteria for a particular property shall take precedence over the General ones if there is a conflict.

8.2 Levels of Review

The Commission has no desire to interfere with the normal maintenance procedures for the Landmark. In order to provide some guidance for the Landmark property's owner, manager or developer and the Commission, the activities which might be construed as causing an alteration to the physical character of the exterior have been categorized to indicate the level of review required, based on the potential impact of the proposed work. Note: the examples for each category are not intended to act as a comprehensive list; see Section 8.2.D.

A. Routine activities which are not subject to review by the Commission:

1. Activities associated with normal cleaning and routine maintenance.

    a. For building maintenance (Also see Sections 9.0), such activities might include the following: normal cleaning (no power washing above 700 PSI, no chemical or abrasive cleaning), non-invasive inspections, in-kind repair of caulking, in-kind repainting, staining or refinishing of wood or metal elements, lighting bulb replacements or in-kind glass repair/replacement, etc.

    b. For landscape maintenance, such activities might include the following: normal cleaning of paths and sidewalks, etc. (no power washing above 700 PSI, no chemical or abrasive cleaning), non-invasive inspections, in-kind repair of caulking, in-kind spot replacement of cracked or broken paving materials, in-kind repainting or refinishing of site furnishings, site lighting bulb replacements or in-kind glass repair/replacement, normal plant material maintenance, such as pruning, fertilizing, mowing and mulching, and in-kind replacement of existing plant materials, etc.

2. Routine activities associated with special events or seasonal decorations which are to remain in place for less than six weeks and do not result in any permanent alterations or attached fixtures.

B. Activities which may be determined by the staff to be eligible for a Certificate of Exemption or Administrative Review, requiring an application to the Commission:

1. Maintenance and repairs involving no change in design, material, color or outward appearance.
2. In-kind replacement or repair, as described in the Specific Standards and Criteria, Section 9.0.
3. Phased restoration programs will require an application to the Commission and may require full Commission review of the entire project plan and specifications; subsequent detailed review of individual construction phases may be eligible for Administrative Review by BLC staff.
4. Repair projects of a repetitive nature will require an application to the Commission and may require full Commission review; subsequent review of these projects may be eligible for Administrative Review by BLC staff, where design, details, and specifications do not vary from those previously approved.
5. Temporary installations or alterations that are to remain in place for longer than six weeks. See Section 9.1.
6. Emergency repairs that require temporary tarps, board-ups, etc. may be eligible for Certificate of Exemption or Administrative Review; permanent repairs will require review as outlined in Section 8.2. In the case of emergencies, BLC staff should be notified as soon as possible to assist in evaluating the damage and to help expedite repair permits as necessary.

C. Activities requiring an application and full Commission review:
Reconstruction, restoration, replacement, demolition, or alteration involving change in design, material, color, location, or outward appearance, such as: New construction of any type, removal of existing features or elements, major planting or removal of trees or shrubs, or changes in landforms.

D. Activities not explicitly listed above:
In the case of any activity not explicitly covered in these Standards and Criteria, the staff of the Boston Landmarks Commission shall determine whether an application is required and if so, whether it shall be an application for a Certificate of Design Approval or Certificate of Exemption.

E. Concurrent Jurisdiction
In some cases, issues which fall under the jurisdiction of the Landmarks Commission may also fall under the jurisdiction of other city, state and federal boards and commissions such as the Boston Art Commission, the Massachusetts Historical Commission, the National Park Service and others. All efforts will be made to expedite the review process. Whenever possible and appropriate, a joint staff review or joint hearing will be arranged.

8.3 General Standards and Criteria

1. The design approach to the property should begin with the premise that the features of historical and architectural significance described within the Study Report must be preserved. In general, this will minimize alterations that will be allowed. Changes that are allowed will follow accepted preservation practices as described below, starting with the least amount of intervention.

2. Changes and additions to the property and its environment which have taken place in the course of time are evidence of the history of the property and the neighborhood. These changes to the property may have developed significance in their own right, and this significance should be recognized and respected. (The term later contributing features shall be used to convey this concept.)

3. Deteriorated materials and/or features, whenever possible, should be repaired rather than replaced or removed.

4. When replacement of features that define the historic character of the property is necessary, it should be based on physical or documentary evidence of original or later contributing features.

5. New materials should, whenever possible, match the material being replaced in physical properties and should be compatible with the size, scale, color, material and character of the property and its environment.

6. New additions or alterations should not disrupt the essential form and integrity of the property and should be compatible with the size, scale, color, material and character of the property and its environment.

7. New additions or related new construction should be differentiated from the existing, thus, they should not necessarily be imitative of an earlier style or period.

8. New additions or alterations should be done in such a way that if they were to be removed in the future, the essential form and integrity of the historic property would be unimpaired.

9. Priority shall be given to those portions of the property which are visible from public ways or which it can be reasonably inferred may be in the future.

10. Surface cleaning shall use the mildest method possible. Sandblasting, wire brushing, or other similar abrasive cleaning methods shall not be permitted.

11. Should any major restoration or construction activity be considered for the property, the Boston Landmarks Commission recommends that the proponents prepare an historic building conservation study and/or consult a materials conservator early in the planning process.

12. Significant archaeological resources affected by a project shall be protected and preserved.

9.0 SPECIFIC STANDARDS AND CRITERIA

Refer to Sections 8.0 for additional Standards and Criteria that may apply.

9.1 Introduction

1. In these guidelines, the verb "**should"** indicates a recommended course of action; the verb "**shall"** indicates those actions which are specifically required to preserve and protect significant architectural elements.

2. The intent of these standards and criteria is to preserve the overall character and appearance of the Pumping Station, Gate House/Filth House, and West Shaft Entrance buildings, including the exterior form, mass, and richness of detail and materiality of the building.

3. Conformance to these Standards and Criteria alone does not necessarily ensure approval, nor are they absolute. The Commission has the authority to issue Certificates of Design Approval for projects that vary from any of the Standards and Criteria on a case-by-case basis. However, any request to vary from the Standards and Criteria must demonstrate the reason for, and advantages gained by, such variation. The Commission's Certificate of Design Approval is only granted after careful review of each application and public hearing(s), in accordance with Chapter 772 of the Acts of 1975, as amended. Any variation from the Standards and Criteria shall not be considered a precedent.

4. The standards and criteria acknowledge that there may be changes to the exterior of the buildings and are intended to make the changes sensitive to the character of the property.

5. The Commission will consider whether later addition(s) and/or alteration(s) can, or should, be removed.

6. Since it is not possible to provide one general guideline, the following factors will be considered in determining whether a later addition(s) and/or alteration(s) can, or should, be removed include:

    a. Compatibility with the original property's integrity in scale, materials and character.
    b. Historic association with the property.
    c. Quality in the design and execution of the addition/alteration.
    d. Functional usefulness.

7. The exterior elevations and roof elements of the Pumping Station, Gate House/Filth House, and West Shaft Entrance buildings are subject to the terms of the exterior guidelines herein stated.

8. Items under Commission review include but are not limited to the following: exterior walls, windows, entrances/doors, roofs, roof projections, additions, accessibility, new construction, paving, major plantings, fences, demolition, and archaeology. Items not anticipated in the Standards and Criteria may be subject to review. Please also refer to the General Standards and Criteria, Section 8.0.

9.2 Exterior Walls of the Building

A. General

1. New openings are not allowed.

2. No original existing openings shall be filled or changed in size.

3. No exposed conduit shall be allowed.

4. Original or later contributing projections shall not be removed.

5. The Boston Landmarks Commission recommends that work proposed to the materials outlined in sections B and C be executed with the guidance of a professional building materials conservator.

6. The Boston Landmarks Commission encourages renovation of building exteriors to prevent further deterioration and to reverse the impact of prolonged maintenance neglect. Such renovation should entail restoration to original appearance as documentary evidence indicates. Rehabilitation to meet continuing or changing uses of the buildings while retaining the property's historic character, will be reviewed and considered on a case-by-case basis.

B. Masonry (Brick, Stone, Terra Cotta, Concrete, Stucco and Mortar)

1. All masonry materials shall be preserved.

2. Original or later contributing masonry materials, features, details, surfaces and ornamentation shall be retained and, if necessary, repaired by patching, piecing-in, or consolidating the masonry using recognized preservation methods.

3. Deteriorated or missing masonry materials, features, details, surfaces and ornamentation shall be replaced with material and elements which match the original in material, color, texture, size, shape, profile and detail of installation.

4. When replacement of materials or elements is necessary, it should be based on physical or documentary evidence.

5. If using the same material is not technically or economically feasible, then compatible substitute materials may be considered.

6. Sound original mortar shall be retained.

7. Deteriorated mortar shall be carefully removed by hand-raking the joints.

8. Use of mechanical hammers shall not be allowed. Use of mechanical saws may be allowed on a case-by-case basis.

9. Repointing mortar shall duplicate the original mortar in strength, composition, color, texture, joint size, joint profile and method of application.

10. Sample panels of raking the joints and repointing shall be reviewed and approved by the staff of the Boston Landmarks Commission.

11. Cleaning of masonry is discouraged and should be performed only when necessary to halt deterioration.

12. If the building is to be cleaned, the mildest method possible shall be used.

13. A test patch of the cleaning method(s) shall be reviewed and approved on site by staff of the Boston Landmarks Commission. Test patches should always be carried out well in advance of cleaning (including exposure to all seasons if possible).

14. Sandblasting (wet or dry), wire brushing, or other similar abrasive cleaning methods shall not be permitted. Doing so changes the visual quality of the material and accelerates deterioration.

15. Waterproofing or water repellents are strongly discouraged. These treatments are generally not effective in preserving masonry and can cause permanent damage. The Commission does recognize that in extraordinary circumstances their use may be required to solve a specific problem. Samples of any proposed treatment shall be reviewed by the Commission before application.

16. In general, painting masonry surfaces shall not be allowed. Painting masonry surfaces will be considered only when there is documentary evidence that this treatment was used at some significant point in the history of the property.

17. New penetrations for attachments through masonry are strongly discouraged. When necessary, attachment details shall be located in mortar joints, rather than through masonry material; stainless steel hardware is recommended to prevent rust jacking. New attachments to cast concrete are discouraged and will be reviewed on a case-by-case basis.

18. The Boston Landmarks Commission encourages renovation of masonry to prevent further deterioration and to reverse the impact of prolonged maintenance neglect. Such renovation should include reversal of brick and mortar deterioration, removal of vegetation growing out of walls, and restoration to original appearance as documentary evidence indicates. Rehabilitation to meet continuing or changing uses of the buildings, while retaining the property's historic character, will be reviewed and considered on a case-by-case basis.

19. The Boston Landmarks Commission encourages restoration of original door and window openings as documentary evidence indicates.

C. Wood

1. All original or later contributing wood materials shall be preserved.

2. Original or later contributing wood surfaces, features, details and ornamentation shall be retained and, if necessary, repaired by patching, piecing-in, consolidating or reinforcing the wood using recognized preservation methods.

3. Deteriorated or missing wood surfaces, features, details and ornamentation shall be replaced with material and elements which match the original in material, color, texture, size, shape, profile and detail of installation.

4. When replacement of materials or elements is necessary, it should be based on physical or documentary evidence.

5. If using the same material is not technically or economically feasible, then compatible substitute materials may be considered.

6. Cleaning of wooden elements shall use the mildest method possible.

7. Paint removal should be considered only where there is paint surface deterioration and as part of an overall maintenance program which involves repainting or applying other appropriate protective coatings. Coatings such as paint help protect the wood from moisture and ultraviolet light and stripping the wood bare will expose the surface to the effects of weathering.

8. Damaged or deteriorated paint should be removed to the next sound layer using the mildest method possible.

9. Propane or butane torches, sandblasting, water blasting or other abrasive cleaning and/or paint removal methods shall not be permitted. Doing so changes the visual quality of the wood and accelerates deterioration.

10. Repainting should be based on paint seriation studies. If an adequate record does not exist, repainting shall be done with colors that are appropriate to the style and period of the building.

D. Architectural Metals (Including but not limited to Cast and Wrought Iron, Steel, Pressed Tin, Copper, Bronze and Zinc)

1. All original or later contributing architectural metals shall be preserved.

2. Original or later contributing metal materials, features, details and ornamentation shall be retained and, if necessary, repaired by patching, splicing or reinforcing the metal using recognized preservation methods.

3. Deteriorated or missing metal materials, features, details and ornamentation shall be replaced with material and elements which match the original in material, color, texture, size, shape, profile and detail of installation.

4. When replacement of materials or elements is necessary, it should be based on physical or documentary evidence.

7. If using the same material is not technically or economically feasible, then compatible substitute materials may be considered.

8. Cleaning of metal elements either to remove corrosion or deteriorated paint shall use the mildest method possible.

9. Abrasive cleaning methods, such as low pressure dry grit blasting, may be allowed as long as it does not abrade or damage the surface.

10. A test patch of the cleaning method(s) shall be reviewed and approved on site by staff of the Boston Landmarks Commission. Test patches should always be carried out well in advance of cleaning (including exposure to all seasons if possible).

11. Cleaning to remove corrosion and paint removal should be considered only where there is deterioration and as part of an overall maintenance program which involves repainting or applying other appropriate protective coatings. Paint or other coatings help retard the corrosion rate of the metal. Leaving the metal bare will expose the surface to accelerated corrosion.

10. Repainting should be based on paint seriation studies. If an adequate record does not exist repainting shall be done with colors that are appropriate to the style and period of the building.

9.3 Windows

Refer to Section 9.2 regarding treatment of materials and features.

1. The Boston Landmarks Commission recommends that work proposed to original or later contributing windows be executed with the guidance of a professional building materials conservator or architect with experience with the specific window type.

2. The original or later contributing window design and arrangement of window openings shall be retained.

3. Enlarging or reducing window openings for the purpose of fitting stock (larger or smaller) window sash or air conditioners shall not be allowed.

4. Removal of window sash and the installation of permanent fixed panels to accommodate air conditioners shall not be allowed.

5. Original or later contributing window elements, features (functional and decorative), details and ornamentation shall be retained and, if necessary, repaired by patching,

splicing, consolidating or otherwise reinforcing using recognized preservation methods.

6. Deteriorated or missing window elements, features (functional and decorative), details and ornamentation shall be replaced with material and elements which match the original in material, color, texture, size, shape, profile, configuration and detail of installation.

7. When replacement is necessary, it should be based on physical or documentary evidence.

8. Aluminum, vinyl, metal clad or vinyl clad replacement sash shall not be allowed.

9. Replacement sash shall be wooden sash matching the historic configuration.

10. Tinted or reflective-coated glass shall not be allowed.

11. Metal or vinyl panning of the wood frame and molding shall not be allowed.

12. Exterior combination storm windows shall have a narrow perimeter framing that does not obscure the glazing of the primary window. In addition, the meeting rail of the combination storm window shall align with that of the primary window.

13. Storm window sashes and frames shall have a painted finish that matches the primary window sash and frame color.

14. Clear or mill finished aluminum frames shall not be allowed.

15. Window frames and sashes should be of a color based on paint seriation studies. If an adequate record does not exist repainting shall be done with colors that are appropriate to the style and period of the building.

16. The Boston Landmarks Commission encourages removal of modern sashes and restoration of original window openings and windows as documentary evidence indicates.

9.4 Entrances/Doors

Refer to Section 9.2 regarding treatment of materials and features; and Section 9.5 for additional Standards and Criteria that may apply.

1. All entrance elements shall be preserved.

2. The original entrance design and arrangement of door openings shall be retained.

3. Enlarging or reducing entrance/door openings for the purpose of fitting stock (larger or smaller) doors shall not be allowed.

4. Original or later contributing entrance materials, elements, details and features (functional and decorative) shall be retained and, if necessary, repaired by patching,

splicing, consolidating or otherwise reinforcing using recognized preservation methods.

5. Deteriorated or missing entrance elements, materials, features (functional and decorative) and details shall be replaced with material and elements which match the original in material, color, texture, size, shape, profile, configuration and detail of installation.

6. When replacement is necessary, it should be based on physical or documentary evidence.

7. If using the same material is not technically or economically feasible, then compatible substitute materials may be considered.

8. Original or later contributing entrance materials, elements, features (functional and decorative) and details shall not be sheathed or otherwise obscured by other materials.

9. Storm doors (aluminum or wood-framed) shall not be allowed on the primary entrance unless evidence shows that they had been used. They may be allowed on secondary entrances. Where allowed storm doors shall be painted to match the color of the primary door.

10. Unfinished aluminum storm doors shall not be allowed.

11. Replacement door hardware should replicate the original or be appropriate to the style and period of the building.

12. Buzzers, alarms and intercom panels, where allowed, shall be flush mounted and appropriately located.

13. Entrance elements should be of a color based on paint seriation studies. If an adequate record does not exist repainting shall be done with colors that are appropriate to the style and period of the building/entrance.

14. The Boston Landmarks Commission encourages restoration of original door openings and doors as documentary evidence indicates.

9.7 Roofs

Refer to Section 9.2 regarding treatment of materials and features; and Section 9.8 for additional Standards and Criteria that may apply.

1. The roof forms and materials of the existing buildings shall be preserved.

2. Original or later contributing roofing materials such as slate, wood trim, elements, features (decorative and functional), details and ornamentation, such as cresting, shall be retained and, if necessary, repaired by patching or reinforcing using recognized preservation methods.

3. Deteriorated or missing roofing materials, elements, features (functional and decorative), details and ornamentation shall be replaced with material and elements which match the original in material, color, texture, size, shape, profile, configuration and detail of installation.

4. When replacement is necessary, it should be based on physical or documentary evidence.

5. If using the same material is not technically or economically feasible, then compatible substitute materials may be considered.

6. Original or later contributing roofing materials, elements, features (functional and decorative), details and ornamentation shall not be sheathed or otherwise obscured by other materials.

7. Unpainted mill-finished aluminum shall not be allowed for flashing, gutters and downspouts. All replacement flashing and gutters should be copper or match the original material.

8. External gutters and downspouts should not be allowed unless it is based on physical or documentary evidence.

9. The Boston Landmarks Commission encourages renovation of roofs to prevent further deterioration and to reverse the impact of prolonged maintenance neglect. Such renovation should include removal of vegetation growing out of the roof, roofline, and gutter line; restoration of missing roof cladding; and restoration of missing flashing and trim along the roof edge to original appearance as documentary evidence indicates. Rehabilitation to meet continuing or changing uses of the buildings, while retaining the property's historic character, will be reviewed and considered on a case-by-case basis.

9.8 Roof Projections (Includes satellite dishes, antennas and other communication devices, louvers, vents, chimneys, and chimney caps)

Refer to Section 9.2 and 9.7 for additional Standards and Criteria that may apply.

Due to the historical and architectural significance of the Pumping Station, Gate House/Filth House, and West Shaft Entrance buildings, roof projections shall not be visible from the public way.

9.9 Lighting

Refer to Section 9.2 regarding treatment of materials and features. Refer to Sections 9.4, 9.10, and 9.11 for additional Standards and Criteria that may apply.

1. There are several aspects of lighting related to the exterior of the building and landscape:

    a. Lighting fixtures as appurtenances to the building or elements of architectural ornamentation.
    b. Quality of illumination on building exterior.

c. Interior lighting as seen from the exterior.
d. Security lighting.

2. Wherever integral to the building, original or later contributing lighting fixtures shall be retained and, if necessary, repaired by patching, piecing in or reinforcing the lighting fixture using recognized preservation methods.

3. Deteriorated or missing lighting fixture materials, elements, features (functional and decorative), details, and ornamentation shall be replaced with material and elements which match the original in material, color, texture, size, shape, profile, configuration, and detail of installation.

4. When replacement is necessary, it should be based on physical or documentary evidence.

5. If using the same material is not technically or economically feasible, then compatible substitute materials may be considered.

6. Original or later contributing lighting fixture materials, elements, features (functional and decorative), details, and ornamentation shall not be sheathed or otherwise obscured by other materials.

7. Supplementary illumination may be added where appropriate to the current use of the building.

8. New lighting shall conform to any of the following approaches as appropriate to the building and to the current or projected use:

   a. Reproductions of original or later contributing fixtures, based on physical or documentary evidence.
   b. Accurate representation of the original period, based on physical or documentary evidence.
   c. Reproductions of original or later contributing fixtures, based on physical or documentary evidence.
   d. Retention or restoration of fixtures which date from an interim installation and which are considered to be appropriate to the building and use.
   e. New lighting fixtures which are differentiated from the original or later contributing fixture in design and which illuminate the exterior of the building in a way which renders it visible at night and compatible with its environment.
   f. The new exterior lighting location shall fulfill the functional intent of the current use without obscuring the building form or architectural detailing.

9. No exposed conduit shall be allowed on the building.

10. As a Landmark, architectural night lighting is encouraged, provided the lighting installations minimize night sky light pollution. High efficiency fixtures, lamps and automatic timers are recommended.

11. On-site mock-ups of proposed architectural night lighting may be required.

9.10 Signs, Canopies, Flagpoles, and Awnings

Refer to Sections 9.3, 9.4, 9.5, 9.9, and 9.11 for additional Standards and Criteria that may apply.

1. Original or later contributing signs, marquees, and canopies integral to the building ornamentation or architectural detailing shall be preserved.

2. Awnings and canopies are not an original feature of any part of the Landmark property; new awnings and canopies shall not be allowed.

3. Signs are viewed as the most appropriate vehicle for imaginative and creative expression and it is not the Commission's intent to stifle a creative approach to signage.

4. All signage will be subject to the Boston Zoning Code in addition to these guidelines.

5. All signs added to the building shall be part of one system of design and reflect a design concept appropriate to the existing historic building.

6. Approval of a given sign shall be limited to the owner of the business or building and shall not be transferable; signs shall be removed or resubmitted for approval when the operation or purpose of the advertised business changes.

7. New signs shall not detract from the essential form of the building nor obscure its architectural features.

8. New signs shall be of a size and material compatible with the building and its current use.

9. The design and material of new signs should reinforce the architectural character of the building.

10. Signs applied to the building shall be applied in such a way that they could be removed without damaging the building. New penetrations should be avoided; where necessary, stainless steel hardware is recommended. See Section 9.2.

11. Lighting of signs and canopies shall be evaluated for the specific use intended, but generally illumination of a sign shall not dominate illumination of the building.

12. No back-lit or plastic signs shall be allowed on the exterior of the building.

13. Temporary signs and banners will be reviewed for size, location, and attachment details; approvals will be limited to the agreed period of installation.

9.11 Landscape/Building Site

Refer to Section 9.2 regarding treatment of materials and features. Refer to Sections 9.9, 9.10, 9.12, 9.13, and 9.14 for additional Standards and Criteria that may apply.

1. The general intent is to preserve the existing or later contributing landscape features that enhance the Landmark property.

2. It is recognized that often the environment surrounding the property has character, scale and street pattern quite different from what existed when the building was constructed. Thus, changes must frequently be made to accommodate the new condition, and the landscape treatment can be seen as a transition feature between the Landmark and its newer surroundings.

3. Original or later contributing site features (decorative and functional), materials, elements, details and ornamentation shall be retained and, if necessary, repaired using recognized preservation methods.

4. Deteriorated or missing site features (decorative and functional), materials, elements, details and ornamentation shall be replaced with material and elements which match the original in material, color, texture, size, shape, profile and detail of installation.

5. When replacement is necessary, it should be based on physical or documentary evidence.

6. If using the same material is not technically or economically feasible, then compatible substitute materials may be considered.

7. New additions/alterations to the site (such as: parking areas, paved footpaths, and driveways, etc.) shall be as unobtrusive as possible and preserve any original or later contributing site features.

8. Removal of non-historic site features (as documentary evidence indicates), especially the metal picket fences, from the existing site is encouraged.

9. The existing landforms of the site shall not be altered unless shown to be necessary for maintenance of the Landmark or site.

10. Original or later contributing layout and materials of the walks, steps, and paved areas shall be maintained. Consideration will be given to alterations if it can be shown that better site circulation is necessary and that the alterations will improve this without altering the integrity of the Landmark.

11. Existing healthy plant materials which are in keeping with the historic character of the property shall be maintained. New plant materials should be appropriate to the pastoral character of the site.

12. Maintenance of, removal of, and additions to plant materials should consider restoration of views of the Landmark.

13. The Boston Landmarks Commission recognizes that the designated landmark must continue to meet city, state, and federal goals and requirements for resiliency and safety within an ever-changing coastal flood zone and environment.

9.12 Accessibility

Refer to Section 9.2 regarding treatment of materials. Refer to Sections 9.3, 9.4, 9.5, 9.6, and 10.0 for additional Standards and Criteria that may apply.

1. A three-step approach is recommended to identify and implement accessibility modifications that will protect the integrity and historic character of the property:

    a. Review the historical significance of the property and identify character-defining features;
    b. Assess the property's existing and proposed level of accessibility;
    c. Evaluate accessibility options within a preservation context.

2. Because of the complex nature of accessibility the commission will review proposals on a case by case basis. The commission recommends consulting with the following document which is available from the commission office:
U.S. Department of the Interior, National Park Service, Cultural Resources, Preservation Assistance Division; *Preservation Brief 32: Making Historic Properties Accessible* by Thomas C. Jester and Sharon C. Park, AIA.

9.13 Renewable Energy Sources

Refer to Section 9.2 regarding treatment of materials. Refer to Sections 9.7, 9.8, and 10.00 for additional Standards and Criteria that may apply.

1. Renewable energy sources, including but not limited to solar energy, are encouraged for the site.

2. Before proposing renewable energy sources, the building's performance shall be assessed and measures to correct any deficiencies shall be taken. The emphasis shall be on improvements that do not result in a loss of historic fabric. A report on this work shall be included in any proposal for renewable energy sources.

3. Proposals for new renewable energy sources shall be reviewed by the Commission on a case-by-case basis for potential physical and visual impacts on the buildings and site.

4. Refer to the *Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings* for general guidelines

9.14 Additions

Refer to Sections 9.6, 9.7, 9.8, and 10.0 for additional Standards and Criteria that may apply.

1. Additions can significantly alter the historic appearance of the buildings. An exterior addition should only be considered after it has been determined that the existing buildings cannot meet the new space requirements.

2. New additions shall be designed so that the character defining features of the buildings are not radically changed, obscured, damaged or destroyed.

3. New additions should be designed so that they are compatible with the existing buildings, although they should not necessarily be imitative of an earlier style or period.

4. New additions shall be of a size, scale and of materials that are in harmony with the existing buildings.

10.0 ARCHAEOLOGY

Refer to Section 9.2 regarding treatment of materials. Refer to Section 10.0 for additional Standards and Criteria that may apply.

All below-ground work within the property shall be reviewed by the Boston Landmarks Commission and City Archaeologist to determine if work may impact known or potential archaeological resources. An archaeological survey shall be conducted if archaeological sensitivity exists and if impacts to known or potential archaeological resources cannot be mitigated after consultation with the City Archaeologist. All archaeological mitigation (monitoring, survey, excavation, etc.) shall be conducted by a professional archaeologist. The professional archaeologist should meet the Secretary of the Interior's Professional Qualifications Standards for Archaeology.

11.0 SEVERABILITY

The provisions of these Standards and Criteria (Design Guidelines) are severable and if any of their provisions shall be held invalid in any circumstances, such invalidity shall not affect any other provisions or circumstances.

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