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Architecture : Planning : Landscape Architecture



A Preservation Plan for the Rogers Locomotive Works Erecting Shop

Submitted to:

City of Paterson

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I. EXECUTIVE SUMMARY

INTRODUCTION

The subject of this preservation plan is the Rogers Locomotive Works Erecting Shop at 2 Market Street, Paterson, Passaic County, New Jersey. Constructed in 1873 by the Rogers Locomotive and Machine Works to assemble locomotives, the four-story brick building housed the sheet iron shop on the 4th floor, the pattern shop on the 3rd, the machine shop on the 2nd and the erecting shop on the first. From the double doors, completed locomotives would leave the building. The building was used in the manufacture of locomotives for about 40 years. It was then used for textile manufacturing and eventually for storage after it was sold by Rogers.

In 1978, the title to the building was transferred to the City of Paterson by the Great Falls Development Corporation in exchange for (1) a 50-year lease on the second, third and fourth floors of the building; (2) a promise to rehabilitate the building using available Federal grant funds; and (3) a promise to "create a museum or cultural center on the first floor of the building. In 1982, the Paterson Museum was relocated here, and the building continues to be used as museum and office space. The lease expires in 2028.

GENERAL DESCRIPTION

The original brick building is a four-story 25 x 5 bay long rectangle. Brick piers separate full-height recessed bays. Topped by denticulated brick arches, these bays house windows and doors which are capped by denticulated or segmental brick arches. The top of the arched bays abut brick dentils which wrap around the entire building, including the gable ends. These dentils are topped by a wood cornice. The roof is a gable with dropped side aisles on the east and west elevations which create clerestory windows at the fourth floor.

Several one and two-story brick additions were appended to the east elevation in the 19th century. With the exception of the northeast addition which has segmental brick arched windows on the north elevation and a corbelled belt course on the east elevation, the additions are largely unadorned with decorative elements limited to the courses of arched brick headers which top most of the window openings. All the sections are topped by wood cornices.

PURPOSE AND SCOPE OF THE REPORT

As described by the New Jersey Historic Preservation Office, the goal of a preservation plan is to "assess and guide the effects of a proposed treatment or construction-related capital project on the existing fabric of a property." For this particular Plan, the grant agreement with the Historic Preservation Office reads: "The preservation plan will enable the City of Paterson to make informed planning, funding , contracting and execution decisions with regard to the overall continued preservation of this important historic resource."

This report will document the existing conditions at the Rogers Erecting Shop and will provide prioritized recommendations to guide all future capital investments in the property. While individual projects have been undertaken, no comprehensive project has been completed on the building in almost 40 years. This report will inform the necessary capital projects.

PRIOR STUDIES AND REPORTS

While the history of the Rogers Locomotive Company is extensively documented in Paterson histories, the National Register Nomination and the National Historic Landmark Nomination, a comprehensive history of this particular building and its evolution is less well documented.

In September 2002, Page Ayres Cowley Architects LLC completed an exterior condition assessment of the building for the Great Falls Preservation and Development Corporation, as well as an assessment of the mechanical systems. This report included recommendations and preliminary cost estimates.

Two additional reports relating to the condition of the North Addition were subsequently completed, one in 2006 by Milton Robinson and one in 2009 by Beth Pochtar.

RECOMMENDED TREATMENT PHILOSOPHY

The preservation of the Rogers Erecting Shop should be planned, designed and executed in compliance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Because the building will most likely continue to be used for multiple purposes which may include museum, gallery space and offices, "rehabilitation" should continue to be the overarching treatment philosophy. Rehabilitation allows for alterations that are compatible with the historic fabric to make possible a new use. All efforts should continue to be made to retain as much of the surviving original and historic fabric as possible.

RECOMMENDED USE

There is a wide range of potential uses for the building. The current uses include the Paterson City Museum and office space for a number of different agencies and companies. In many ways, the building is ideal for the museum. With upgrades to the building systems, etc., this is an appropriate continued use. Because the building is so large, a mix of uses makes sense, and the building's scale and configuration make sense for commercial office space.

OWNERS AND STEWARDS

The City of Paterson owns the Rogers Locomotive Works Erecting Shop. Per the lease agreement from 1978, a building operations committee consisting of representatives from the City and from the Great Falls Preservation and Development Corporation is intended to oversee the management of the building. Day to day operations are managed by the staff of the Great Falls Preservation and Development Corporation.

II. INTRODUCTION

STATEMENT OF SIGNIFICANCE

The Rogers Locomotive & Machine Company Erecting Shop of 1871 is significant as an important contributing structure to the Great Falls National Historic Landmark District which documents the industrial history of Paterson. Representing the locomotive industry—Paterson was the world's center for the production of cotton, silk and locomotives—the Rogers Erecting Shop stands as an intact symbol of American industrial innovation.

Individually, the Rogers Erecting Shop is an outstanding and rare example of mid-19th-century industrial architecture designed and planned for a specific technological purpose. Built at the end of an era when locomotives still were assembled side-by-side rather than in an assembly-line fashion, the plan of the Rogers erecting shop is significant and with its 12 large doors across its front (west) elevation facing Spruce Street, reflects the maximum capacity of the building to erect twelve locomotives at a time. Upper floors of the erecting shop contained machining, woodworking and brass-working operations. Finished parts from the upper floors were passed down vertically to the erecting shop floor. Larger parts and materials were originally moved between floors by exterior hoists making use of the large doors located on each floor at the gable ends of the building.

TEAM MEMBERS

The architecture firm of Clarke Caton Hintz, located in Trenton, New Jersey, was responsible for the coordination and editing of the Preservation Plan, and the development of several chapters. John Hatch, FAIA, served as overall team leader, with Leaha Bovino and Emily Regner assisting with conditions assessment, building measurements, drawings, etc. Ms. Margaret Newman was a member of the building investigation team and authored several sections of the Preservation Plan.

Patrick Harshbarger of Hunter Research provided additional historic research and context, developed maps showing the development of the site and authored several sections of the Preservation Plan.

Harrison Hamnett, structural engineers based in Pennington, NJ, assessed the building structure. Kelter & Gilligo, Mechanical, Electrical and Plumbing Engineers based in Princeton Junction, NJ, assessed the building systems. Becker and Frondorf of Philadelphia provided the cost estimates.

DESCRIPTION OF METHODOLOGY

Clarke Caton Hintz undertook this plan in July and August of 2016. Hunter Research completed the historical research in July and August while most of the building investigations including the structural and mechanical investigations occurred in July.

Once the building investigations and historic research were complete, the information was compiled in report form. Based on the existing conditions, a treatment plan was developed along with a philosophy to guide the future work.

ORGANIZATION OF THE PLAN

This Preservation Plan is divided into two sections. The first addresses the past and present conditions of the building, including the history of the construction of the building, its rehabilitation, the conditions and recommendations contained in the 2002

report by Page Ayers Cowley Architects, the 2006 report by Milton Robinson, RA, the 2009 report by Beth Pochtar, PE, and its current conditions. The second section of the Preservation Plan provides the philosophical and practical framework for future work at the Rogers Erecting Shop.

The report begins with a brief history of the Rogers Locomotive Works in general and then covers the history and evolution of the Erecting Shop specifically. It documents the historic designations of the building and district and discusses the modern history of the building including the public/private partnership between the City of Paterson and the Great Falls Historic Preservation and Development Corporation and the 1970s rehabilitation of the building. Following that is an assessment of the overall building with photographs including its architectural, structural and mechanical systems.

The second portion of the document discusses the future including an overall treatment philosophy, ideas for future uses of the building and specific recommendations for these elements.

FUNDING SOURCES

This Preservation Plan was partially funded by a grant from the New Jersey Historic Preservation Office's Certified Local Government program, as well as funding provided by the City of Paterson.

LIMITATIONS OF THE PLAN

The conditions assessment portion of this plan addresses only issues that could be seen with the naked eye. Probes were not completed and there may be building or structural conditions covered by existing finishes. In addition, the plan does not include any material or finish testing. Prior to the completion of design documents for any preservation projects, testing of the mortar is recommended, as well as testing for original exterior finishes (although this may be difficult as most of the original exterior wood may have been replaced during the 1978 rehabilitation).

ACKNOWLEDGEMENTS

The Preservation Plan team wishes to thank the following people for their assistance in providing information and context for this Plan, as well as access to the building: Peggy Robertson, Executive Director of the Great Falls Preservation and Development Corporation; Giacomo Destefano, Director of the Paterson Museum as well as members of his staff; and Gianfranco Archimede, Director of Historic Preservation for the City of Paterson.

III. HISTORIC ARCHITECTURAL AND ARCHAEOLOGICAL SIGNIFICANCE

INTRODUCTION

The Rogers Locomotive & Machine Company Erecting Shop of 1871 is an outstanding and rare example of mid-19th-century industrial architecture designed and planned for a specific technological purpose. An erecting shop housed the final steps in the construction of steam locomotives. This involved the bringing together of a locomotive's numerous parts – frame, boiler, smoke box, chimney (or stack), valves, cylinder, drive wheels, truck, and even the whistle and bell – to assemble the final product.

Historically, the erecting shop was a hub of activity within a vastly larger locomotive-building complex where the parts were fabricated from metal and wood prior to being assembled in the erecting shop. Today, the Rogers locomotive erecting shop maintains its spatial relationship within a surviving industrial complex that includes a millwright shop of 1868 (rebuilt after a fire in 1879), frame fitting shop of 1881, administration building of 1881 and a recently rehabilitated storage building of circa 1880, all located west of the erecting shop on the opposite side of Spruce Street. Sadly, these represent less than half of the buildings that once made up the entire Rogers complex. Other buildings no longer present included a tender shop, blacksmith shop and hammer shop, which enclosed the erecting shop's east and south sides in an area now occupied by parking lots, as well as a boiler shop, foundry, pattern loft and warehouse to the south of the erecting shop between Spruce and Pine streets.

The plan of the Rogers erecting shop is significant in several respects. It was built at the end of an era when locomotives still were assembled side-by-side rather than in an assembly-line fashion where the locomotive moved from station to station within a long and narrow, high-ceilinged, single-story shop building. This early way of assembling locomotives is reflected in the layout of the Rogers erecting shop with its 12 large doors across its front (west) elevation facing Spruce Street. Each of these doors represented an erecting bay where individual locomotives were assembled inside the building. The number of bays represented the maximum capacity of the building to erect twelve locomotives at a time. Upper floors of the erecting shop contained machining, woodworking and brass-working operations. Finished parts from the upper floors were passed down vertically to the erecting shop floor. Larger parts and materials were originally moved between floors by exterior hoists making use of the large doors located on each floor at the gable ends of the building. By 1877, an elevator had been added to the building's east (rear elevation) about where the modern passenger elevator is today. A cupola, no longer present except for its platform, housed a bell for marking the time throughout the work day and signaling emergencies. Rising from the cupola was a tall pole topped by a weathervane in the shape of a locomotive. The erecting shop was designed to enclose a work flow that was well-suited to the craft production of mid-19th-century American locomotives such as the 4-4-0 "American-style" locomotive (Figure 1).

Unfortunately, the Rogers company fell behind the times during the latter decades of the 19th century, in part because its plant was not built to fabricate and erect the ever-larger locomotives of a later era. These massive locomotives were built by Rogers' competitors, like Baldwin Locomotive Company of Philadelphia and the Lima Locomotive Works of Lima, Ohio, in single-story erecting shops that typically consisted of long sheds with large overhead traveling cranes and ample space to store and move large metal

castings and components. Older, smaller and vertically arranged erecting shops, like the Roger's erecting shop of 1871, fell out of favor and soon were abandoned or replaced. Today, the Rogers erecting shop may be the only surviving multi-story erecting shop of its era that is associated with a major American railroad locomotive-building company. There are a few other late 19th-century erecting shops, but these are almost exclusively associated with the facilities of major railroad companies such as the Pennsylvania Railroad, the Southern Railway or the Southern Pacific Railroad, which invested in facilities to build and repairs their own locomotives.

The Rogers Locomotive & Machine Works Erecting Shop gains considerable significance from its location in Paterson, a city which was known as a center of the locomotive-building industry. Rogers, founded in 1831, was the oldest and most significant of Paterson's locomotive-building machine works. Paterson also was home to two other important builders – Swinburne, Smith & Company, established in 1848 and which merged into Grant Locomotive & Machine Company in 1867, and the Danforth Locomotive & Machine Company, established in 1852 and which later became Danforth and Cooke. The city was also home to a number of smaller locomotive-building firms, most rather short-lived. Many of these firms were founded by former Rogers' employees or business associates. Due to the prominence of Rogers and its offshoots, Paterson was known worldwide as a locomotive city several decades before it became the silk city. In 1873, the locomotive and allied metal industries employed over 5,000 Paterson workers, accounting for close to ten percent of the city's population (Gutman 1976: 217, 221). Today, the Grant and Danforth works, which neighbored the Rogers works, are gone except for their archaeological expressions, and a portion of a later Danforth and Cooke complex, built in 1888, survives in south Paterson at Madison Street (Hunter Research, Inc. 2012). None of these remnants' sites compares with the surviving buildings of the Rogers complex at Spruce and Market streets, of which the erecting shop is a center piece.

CURRENT HISTORIC DESIGNATIONS

The Rogers erecting shop is officially recognized for its historical significance as a key contributing resource within the Great Falls of Paterson/Society for Useful Manufactures (S.U.M.) Historic District. The district is listed in the National Register of Historic Places (April 17, 1970, amended January 8, 1975) and in the New Jersey Register of Historic Places (May 27, 1971, amended October 10, 1974). The district's exceptional significance to American history was recognized with its elevation to National Historic Landmark status (May 11, 1976) (Fichtelberg 1970; Fries 1976). Listing on the state and national registers provides that all projects with the potential to alter, remove or destroy the building's historic fabric are subject to review by the New Jersey Historic Preservation Office (NJHPO) under the New Jersey Register of Historic Places Act. The building is owned by the City of Paterson and subject to a preservation easement held by the State of New Jersey. Projects involving federal funding are subject to Sections 106 and 110 of the National Historic Preservation Act. The erecting shop is also within the City of Paterson's Great Falls Historic District, and thus subject to historic preservation provisions of the city's Zoning and Land Development Ordnance (1978). Design review and regulation of new construction, reconstruction, restoration or other alteration work impacting the erecting shop and other buildings and landscapes in the historic district is granted to the City of Paterson Historic Preservation Commission (John Milner Associates, Inc. 1999). The erecting shop is

included within the boundaries of the National Park Service's Paterson Great Falls National Historical Park, established by Congress in 2009.

Local, state and federal historic designation recognizes the importance of Paterson as the first planned industrial city in the United States. In 1791, New Jersey chartered the Society for the Establishment of Useful Manufactures (S.U.M.) through the efforts of Alexander Hamilton and others. They envisioned the need to bolster America's economy with industrial businesses that could compete with England, especially in the area of textiles and machines. The S.U.M. was empowered to raise capital through the issuing of stock and acquiring a site suitable for an industrial city, a very novel idea for its time. Paterson was selected because of the Passaic River and the Great Falls, which were necessary to provide waterpower to the mills. The S.U.M. struggled at first but over the course of several decades eventually succeeded in building a three-tier system of raceways and seats for over two dozen mills. The Rogers machine works, originally conceived as a combined textile machine works and cotton spinning mill, was located on the upper and middle raceways in 1831-32, and eventually expanded to focus exclusively on locomotives.

ROGERS LOCOMOTIVE WORKS – ORIGINS AND EARLY HISTORY OF THE ERECTING SHOP SITE (1791-1870)

While it is not the purpose here to layout a full history of the Rogers locomotive works, it is useful to have a basic outline of the company's origins in order to understanding the erecting shop site's specific developmental history. Several important Rogers' company buildings occupied the erecting shop site prior to 1871.

The principal figure in the early history of the Rogers company was Thomas Rogers (1792-1856) (Figure 2). Rogers arrived in Paterson circa 1812 as a journeyman carpenter. He soon was working in a shop making wooden patterns used in the manufacture of textile machinery. The shop was owned by John Clark, Sr., who established Paterson's first textile machine business. The early history of Paterson was dominated by textiles, particularly the spinning and weaving of cotton and wool. In 1821, Rogers ascended to become part owner of a combined machine shop and cotton mill jointly owned with John Clark, Jr. and Abraham Goodwin, Jr. The Goodwin, Rogers & Company's shop was located on Van Houten Street on a lot that was later occupied by the Phoenix Mill (Locomotives and Locomotive Building 1876: 1-2; Trumbull 1882: 111-118; Nelson and Shriner 1920: 351; Fries 1973: 8-9; Rutsch 1978: 189-196).

Shortly after selling his shares in Goodwin, Rogers & Company for a handsome profit in 1831, Thomas Rogers formed a partnership with Morris Ketchum and Jasper Grosvenor, New York City bankers who provided additional capital but left the technical side of the business up to Rogers. The new firm of Rogers, Ketchum & Grosvenor set up shop in the Jefferson Works, a former cotton mill on the west side of Spruce Street adjacent to the S.U.M.'s upper and middle raceways. This site is directly west and across the street from the erecting shop. Rogers initially focused on the fabrication of textile machines; however, he was able to secure an order from the South Carolina Railroad for 100 sets of iron wheels and axles, a product that might otherwise have been imported from England. This project introduced Rogers to the business potential of supplying parts to America's infant railroad industry (Trumbull 1882: 111-118; Locomotives and Locomotive Building 1886: 2; Nelson and Shriner 1920: 352; Fries 1973: 10-11).

Starting in 1833, Rogers began expanding his works east of the Jefferson Works across Spruce Street. These empty lots were for sale from the S.U.M., which had acquired this property, along with most of what would become downtown Paterson, from local landowners in the early 1790s. The first new building erected by Rogers was an iron-planing shop, which was situated on the west side of the future erecting shop lot as shown in the Bouton map of 1835 (Figure 3). This was followed very shortly by a foundry, which was located to the north of the iron-planing shop; the two buildings are believed to be those shown on the Freeman map, also of 1835 (Figure 4). In 1836, a two-story, stone millwright shop was erected at the southeast corner of Market and Spruce streets, today the north end of the erecting shop.

In early 1837, Rogers began construction of the company's first locomotive, Sandusky, in a three-story locomotive shop built between Spruce and Pine streets about 200 feet south of Market Street near the south end of the present-day erecting shop lot. This locomotive shop, a precursor to the later erecting shop of 1871, was arranged with a single track running the entire east-to-west length of its interior, so that one engine was assembled behind another (Fries 1973: 13-15; Rutsch 1978: 197-205). An idealized representation of the Rogers, Ketchum & Grosvenor complex as it was circa 1837 was published in 1876 in Locomotives and Locomotive Building, a catalogue and promotional piece produced by the Rogers company for the Centennial Exhibition in Philadelphia (Figure 5). This book was republished several times over the next 20 years.

By 1838, Rogers had produced seven engines, all to great acclaim. By 1854, annual production of locomotives was over 100 per year. Rogers and his leading workmen, including William Swinburne who would later play a key role in the establishment of the Grant Locomotive Works, were exceptionally successful at locomotive building because they innovated and constantly improved the technological operation and efficiency of their locomotives (Shriner 1890: 186; Fries 1973: 16-17).

Analysis of historic maps published between 1840 and 1870 documents that the plan of the Rogers locomotive works complex remained basically unchanged from the late 1830s to the late 1860s (Figures 6-9). The complex was bifurcated by Spruce Street. To the west of the street there was a large machine shop powered by the water from the S.U.M.'s upper raceway, while to the east of Spruce Street were "hot metal" shops such the foundry and blacksmith shop, and a locomotive shop. These buildings had their long east-to-west axes perpendicular to Spruce Street with their narrow ends facing the street, as shown in a photograph looking south from Market Street about 1860 (Figure 10). The future erecting shop lot was occupied by a millwright shop, a large blacksmith shop and an iron-planing shop, as well as several storage sheds.

The death of Thomas Rogers in 1856 created a need to change the corporate structure of the company. His passing brought numerous tributes, as it was without exaggeration that Rogers' locomotives were considered to be the most advanced of those produced in antebellum America (Rutsch 1978: 212). In 1856, the company reformed as the Rogers Locomotive & Machine Company with Jacob S. Rogers (circa 1824-1901) (Figure 11), Thomas Rogers' son, as president. Jacob had trained in the shops under his father's watchful eye but he quickly distanced himself from the everyday affairs of the company. There was sufficient homegrown in-house talent at the Rogers works for it to continue as a leading American locomotive builder. During the Civil War, federal contracts

kept the works producing at a record pace and immediately after the war, a railroad building boom, including the completion of the transcontinental railroad, meant the shops continued to hum, bang, clang and belch smoke (Trumbull 1882: 114-124; Nelson and Shriner 1920: 354).

The locomotive works, however, were near capacity and there was no room to expand in the densely built environment of the Great Falls industrial district. In 1869, the Rogers Locomotive & Machine Company began a major campaign to renovate the works. Over the next three years, the first-generation buildings of the antebellum years were leveled and replaced by larger shops. The new buildings occupied essentially the same area but were tightly spaced and taller with high monitor roofs for natural lighting and ventilation. By the close of 1872, the block bounded by Market, Spruce, Pine and Oliver streets was filled with newly constructed industrial buildings. These included a blacksmith shop, hammer shop, boiler shop, foundry, tender shop and erecting shop (Figures 12 and 13). The shops west of Spruce Street were also largely rebuilt. The construction campaign of 1869 to 1872 increased the maximum annual capacity of the Rogers works from about 200 locomotives per year to over 300 locomotives per year (Rutsch 1976: 581).

DEVELOPMENTAL HISTORY OF THE LOCOMOTIVE ERECTING SHOP (1871-1915)

The industrial architecture adopted by the Rogers Locomotive & Machine Works in the rebuilding campaign of 1869 to 1872 is evident in the erecting shop of 1871. Most of the shops of this era had brick exterior walls, as opposed to stone and wood-sided construction of the earlier Rogers buildings. They also tended to make use of what was known as “slow-burning” construction. This style of construction made use of iron columns, heavy timber beams and thick wooden planks for the interior framing and flooring of the brick shops. A small fire inside a shop had difficulty igniting the beams and flooring, and the fire would have to be particularly intense and long duration to spread from one floor to another in a manner sufficient to bring on a collapse of the building.

The use of slow-burning construction was not a new technique. It had proven an effective means of retarding fires in New England textile mills since the 1820s and was adopted in other regions of the country and by other industrial sectors during later years. Another fire-retardation technique adopted from textile mills was separating the main shop floors from the stair and elevator towers by thick brick walls and metal-sheathed doors. Boiler rooms, used to create the steam for stationary steam engines and industrial processes, were also placed in separate spaces due to the high risk associated with boiler fires and explosions. In the case of the erecting shop, the boiler room was located in a separate two-story wing at the northeast corner of the main shop. Most factory owners and insurers considered fires inevitable, so the goal was to prevent fires from becoming so intense that they consumed entire buildings and complexes.

The exterior load-bearing walls of the erecting shop were another fire-retarding characteristic of the architecture. Brick was more heat resistant than stone, which had a tendency to crack and fail under intense heat. The brick arch window openings, while characteristic of the Italianate style in vogue during the middle decades of the 19th century, were also a stronger type of opening than a flat lintel, which was more prone to collapse during fires. The corbelled brick eaves of the cornice were a structural technique to provide a bearing for the heavy timber roof

trusses, but they also protected the beam ends of those trusses from fire. Slate roofs helped to prevent wind-blown sparks from catching fire to the shop roof (Rutsch 1976: 223-225; Candee 1989; Hunter Research, Inc. 2012: 2-7).

Unlike the old Rogers locomotive shop of 1836, the erecting shop of 1871was arranged so that twelve locomotives could be worked on side-by-side on the first floor. The old shop had a single track, so only one locomotive could be moved out of the building at a time, but in the new erecting shop a series of twelve doors provided that any engine could be brought in or out as needed. In the erecting shop's original layout, there were also twelve doors across the east or rear elevation, presumably intended to allow parts to be brought in from the adjacent blacksmith or hammer shops. This arrangement must not have proven very practical because the rear doors were soon blocked off by additions to the east side of the erecting shop.
The upper floors of the erecting shop were used for woodworking, brass-working and machining. The second and third floors had arcaded windows for light and air, while the uppermost floor or "loft" had a series of small windows along the monitor roof. The central bays in the gable ends had loft doors that opened to allow for the loading or unloading of machinery and supplies. Hoists were located at the gable peaks with block and tackle for raising and lowering loads. Historic photographs from this era indicate that the roof was pierced by four large metal vents with cone-shaped caps. It has been assumed that these vents exhausted smoke and fumes from the engine assembly area on the first floor. The erecting shop was capped by a wood cupola that housed a bell that rang out the starting and quitting times of the workers' shifts, as well as signaled emergencies such as a fire. Atop the cupola was a tall pole sporting a locomotive-pattern weathervane.

There are several indications that the erecting shop underwent modifications in the years immediately after its construction in 1871. These modifications appear to have been intended to increase the shop's capacity and efficiency. A one-story brick annex was added to the middle of the east (rear) elevation before 1875. Archaeological excavations that took place in 1973 revealed that the ground level of this annex was originally three feet below the present-day floor level (Rutsch 1978: 582). No later than 1877, a freight elevator shaft was also attached to the east elevation, about where the building's modern passenger elevator is today (Figures 14 and 15). A two-story boiler house with a tall brick smokestack was added to the erecting shop's southeast corner by 1884 (Figures 16 and 17). The boiler house appears to have replaced a small annex and free-standing brick building of unknown use. In a final expansion of about 1885, a large two-story brick machine shop addition was added to the erecting shop's southeast corner (Figure 18). In 1973, archaeologists discovered bricked-up windows and doorways beneath the addition's current ground level, another indication that the late 19th-century ground surface was about three feet lower than it is today.

The Sanborn Insurance Company map of 1887 (Figure 19) documents the industrial activities that took place in the erecting shop. The main shop's first floor was the area where locomotives were assembled. Trenches in the floor allowed workers to go under the locomotives to access the driving wheels and trucks. The second floor of the main shop was a machine shop, the third floor a pattern shop, and the fourth-floor loft a sheet-iron shop. A pedestrian bridge crossed Spruce Street between the second floor of the erecting shop and the millwright shop on the east side of the street. This iron-truss pedestrian bridge is evident in some later photographs (see Figures 24 and 26).

Along the erecting shop's east elevation, the boiler house of 1877 enclosed four boilers and a 200-horsepower steam engine. The engine likely supplied power via belts and line shafting to the various areas of the shop. The second floor of the boiler house was used as an auxiliary machine shop. The annex of 1875 at the middle of the east elevation was also a machine shop with its basement used for the storage of iron. Both floors of the southeast addition of 1885 were also used as machine shops, an indication of the large amount of metal shaping (turning, planing, cutting, grinding, etc.) that took place in fitting together the parts of a steam locomotive.

The concern for fire was not unwarranted. The largest fire to strike the Rogers works occurred in 1879, heavily damaging the millwright shop of 1869, one of the new brick slow-burning structures, and claiming several wood-framed buildings nearby. The fire did not spreading to other parts of the works east of Spruce Street or to the adjacent buildings of the Barbour Flax Mills. After the fire, the millwright shop was reconstructed and several new brick structures erected, including a new storage building situated over the middle raceway and a handsome three-story brick administration building (Fries 1973: 17; Archimede 2012).

After 1885, there were no major changes made to the plan or architectural character of the erecting shop as documented by maps and photographs (Figures 20-23). The main shop of 1871 and its additions of 1875 to 1885 remain standing today. In the final years of locomotive production at the Rogers works, however, the erecting shop proved inadequate to the demands of assembling the ever larger and more powerful locomotives required by railroad companies. Several efforts were made to retrofit the erecting shop for larger locomotives, but they were stopgap measures at best. One of these attempts was enlarging the erecting bay doors by replacing the original arched openings with flat lintels. This took place sometime between 1880 and 1900. Another was lowering the tracks in the erecting bays and rearranging the timbers that supported the second floor to gain a few extra inches of height for locomotives. By 1900, it was generally recognized that the erecting shop was too small and that there was no way that remodeling would make it acceptable (Fries 1973: 18).

Another problem that had long nagged the Rogers works was the challenge of moving finished locomotives from the erecting shop to the main-line railroads that served Paterson. These railroads did not directly service the works meaning that the locomotives had to be moved through the city streets, usually in the dead of night to avoid interrupting traffic. For many years, the locomotives were dragged nearly three-quarters of a mile on skids pulled by teams of horses, and then in 1864, Rogers began using a street trolley line that ran from the corner of Spruce Street along Market Street to the Erie Railroad main line east of downtown. Paterson's city officials would not allow the locomotives to travel in the streets under their own steam for fear of sparks and cinders starting fires in the adjacent neighborhoods, so the locomotives still had to be pulled by horses. It was not until 1901 that the city relented and allowed the locomotives to travel under their own power.

By 1901, however, the Rogers Locomotive & Machine Works was in financial distress and its future uncertain. In August 1900, Jacob Rogers, age 76, toured the plant after a long absence and suddenly announced his intention to shut down all operations after completion of the locomotives then currently under order. More than 1,500 employees were thrown out of work. The city's bankers and business interests attempted to negotiate with Rogers but he

remained steadfast in his desire to sell the company. In May 1901, Rogers sold to a syndicate of New York bankers. This sale, however, was challenged in court by minority stockholders. It was during this litigation that Rogers passed away. In a final snub to the City of Paterson, he donated his fortune to New York's Metropolitan Museum of Art. Rogers reportedly had no knowledge or interest in art and had been to the museum only once (Nelson and Shriner 1920: 354).

The new owners reorganized as the Rogers Locomotive Company and began to invest in modest improvements to modernize the plant. A major initiative was the construction of a new erecting shop on the west side of Spruce Street on the former site of the Ivanhoe Works, a textile mill, which had been seized by the City for non-payment of taxes (the present-day location of the Burger King and its parking lot). This second erecting shop was completed in 1902 and while not large by the standards of the time it had an open floor plan and traveling cranes capable of lifting complete engines. The old erecting shop of 1871 continued to be used to produce small switching and tank engines. Photographs of finished locomotives in Spruce Street show the erecting shop of 1871 to have become a tired-looking building with broken windows and deferred maintenance (Figures 24-27).

In 1905, the American Locomotive Company (ALCO) purchased nearly all of the stock of the Rogers Locomotive Company. ALCO incorporated in New York State in 1901 and grew through the absorption of smaller companies. It eventually sought to close the older less efficient works it had acquired, thus eliminating competition, while consolidating operations at its primary plant in Schenectady, New York. ALCO did not seriously consider investment in the Rogers works, which was relegated to relatively minor projects including the manufacture of parts for steam shovels and dredges. A depression in the market for new locomotives prompted ALCO to close the Rogers works in July 1913. Over the next 18 months, the works were stripped of all salvageable machines and materials. Many of the buildings surrounding the erecting shop, including the blacksmith shop, the tender shop, hammer shop and pattern shop were demolished (Figures 28 and 29). ALCO formally dissolved the Rogers Locomotive Company on January 22, 1915 (Rutsch 1978: 244-249).

THE ERECTING SHOP AFTER THE CLOSING OF THE ROGERS LOCOMOTIVE WORKS (1915-PRESENT)

In 1919, John Sachs of New York City, president of the Passaic Bleachers & Dyers Association, Inc., purchased the empty erecting shop (R. L. Polk & Company 1919: 889; Passaic County Deed 1919: C28/2; American Wool and Cotton Reporter 1922: 618). Over the next 20 years, Sachs leased out the building, which was then known as the John Sachs Building, to various textile businesses. Tenants during this period included the Rockledge Mills silk tie and novelty manufacturers (1920-1940) and the Separate Sanitary Laundry Company (1924- 40), as well as many other smaller silk manufacturers, likely the small family weaving shops that were known in the trade as "cockroach shops" (Paterson Directories 1919-1940).

In 1941, the building was sold to Max and Nathan Stein, who had interests in Paterson's silk and dyeing industry (Passaic County Deeds 1941: K53/240; N42/355). Max Stein was a partner in the Globe Silk Mills, established in 1914, and was also a part-owner of the Market Street Realty Company, which managed the Steins' interest in downtown Paterson real estate (Textile World Journal 1918: 210). The Steins, as

did Sachs, leased the erecting shop out to various textile businesses. By 1960, the building was being occupied by the Manhattan Shirt Company, which had garment factories in Paterson. Additional storage for the shirt company was provided by a single-story, cinder-block warehouse that was built immediately east of the erecting shop between 1954 and 1966. This warehouse was torn down in the early 1970s (Paterson Directories 1941-1960). In 1973, Great Falls Development, Inc. (later recast as Great Falls Preservation and Development Corporation) purchased the vacant erecting shop from the Stein family with the expressed goal of preserving the building and using it as a keystone for the economic redevelopment of the Great Falls/S.U.M. Historic District (Passaic County Deeds 1973: X94/548).

Great Falls Development, Inc. was an outgrowth of the preservation movement that had developed around saving Paterson's Great Falls/S.U.M. Historic District during the late 1960s and early 1970s. A feature of the redevelopment plan was rehabilitating the historic shops and mills to house alternative uses including industries, artist collaboratives and housing, all of which eventually came into being in one form or another, although the district has long struggled to have the level of vitality envisioned in the early years of the preservation movement. The actual catalyst for historic preservation was the threat posed by the New Jersey Department of Transportation's plan to building an expressway, known as N.J. Route 20, through the Great Falls area to the north side of downtown Paterson. Opposition to the freeway was timely in that local preservationists were able to make use of the recently enacted National Historic Preservation Act of 1966 and the National Environmental Policy Act of 1969. Through the administrative procedures, preservation-minded citizens and Paterson's city officials were able to raise serious and legally enforceable objections to a federally funded project that would have destroyed many industrial buildings and forever changed the historic character of downtown Paterson. As part of the mobilization of preservation interests, the Great Falls/S.U.M. Historic District was listed on the National Register of Historic Places in 1970 and the New Jersey Register of Historic Places in 1971. National Historic Landmark status was achieved in 1976.

The National Park Service's Historic American Engineering Record (HAER), a new program established in 1969 as an extension of the Historic American Buildings Survey (HABS), began documenting buildings in the Great Falls/S.U.M. Historic District in 1971, including dispatching photographer Jack Boucher to capture large-format documentation photographs of the Rogers Locomotive & Machine Works Erecting Shop (Figures 30-35). Measured drawings of the erecting shop were produced by HAER architects in 1973 (Figures 36-38). That same year Boucher returned to Paterson to take a series of aerial photographs of the industrial landscape, several of which focused on the Rogers works (Figures 39 and 40). Historian Russell L. Fries prepared a historical overview of the Rogers works to accompany the drawings and photographs (U.S. National Park Service, HAER 1971, 1973; Fries 1973).

Above-ground documentation of the erecting shop was accompanied by a ramping up of archaeological investigations conducted by industrial archaeologist Edward Rutsch and others under the rubric of a public-funded program known as the Salvage Archaeology Project. The Rutsch-led team investigated many areas of the historic district and the nearby Dublin residential neighborhood; however, a major focus was investigating in advance of a storm drain that was to be built to the Passaic

River from the north end of N.J. Route 20 (now N.J. Route 19) where it terminates near I-80. This drain passes under what is today the erecting shop's visitor parking lot.

Rutsch's investigations confirmed that the parking lot sat atop a rich and significant industrial archaeological site comprising the eastern section of the former Rogers locomotive works. Not only did the site contained intact foundations of the shop buildings that were contemporaneous with the erecting shop of 1871, but the foundations of the Rogers buildings of the mid-1830s to 1850s remained buried under this later rebuilding episode. The whole site lay capped under about three feet of fill, indicating that the original ground surface of the mid-1830s was some 10 to 12 feet below the modern-day surface. It was even suspected that mid-1830s archaeology could survive under the foundation of the erecting shop itself. A long trench associated with these investigations is visible in the aerial photographs taken by Jack Boucher in December 1973 (Figures 39 and 40). While archaeological data recovery was undertaken because of the anticipated destruction of archaeological materials by the storm drain, large areas of the parking lot to either side of the drain were left uninvestigated with the high probability that significant industrial archaeological features remain intact. A site plan of the areas investigated by Edward Rutsch from 1973 to 1976 provides the basis for an interpretation of present-day archaeological sensitivity. Areas not impacted and documented by the storm drain and salvage archaeology should be assumed to be of high archaeological sensitivity (Figure 41). A professional archaeologist should be consulted prior to any ground-disturbing activities.

In 1977, the State of New Jersey entered into an agreement with Great Falls Development, Inc., then owners of the erecting shop, to acquire a preservation easement (Passaic County Deed 1977: A101/570). This was followed in 1978 by a partnership agreement between the City of Paterson and Great Falls Development, Inc. The City acquired ownership of the erecting shop and Great Falls Development, Inc. leased the second through fourth floors. Income from rentals was to support operation and ordinary maintenance of the erecting shop by Great Falls Development, Inc. (Great Falls Historic District and the Public-Private Partnership circa 2006). At the same time, the first floor was designated to become a museum, "designed to highlight and showcase the history and potential of industrial Paterson" (Passaic County Deed 1978: P102/81). Concurrently, the City of Paterson applied for and received a Title IX economic development grant from the U.S. Department of Housing and Urban Development. Over $1 million was placed toward rehabilitation of the erecting shop for its use as a museum and rental offices. This rehabilitation work took placed from 1979 to 1982 with Nathaniel David Bilow serving as the project architect (City of Paterson, Department of Community Development 1977; Bilow 1978, 1979, 1981, 1982).

Since 1982, the erecting shop has served as home to the Paterson Museum on the first floor with rentals on the upper floors managed by Great Falls Preservation and Development Corporation (GFPDC). There have been no major alterations to the building since the completion of the rehabilitation project in 1982, but there has been interior remodeling to suit the needs of various tenants. Much of this work has been in the nature of partitioning and finishing the upper floors for office spaces. Responsibility for major capital improvements and repairs has at times tested the relationship between the City of Paterson and GFPDC. In 1997 the parties went to court to clarify the lease agreement of 1978 and settle disputes over financial responsibility for major repairs or

capital improvements. Under direction of the court to employ a neutral expert, a conditions assessment was prepared by architects Page Ayres Cowley Architects LLC in 2002 to clarify current conditions and needed capital improvements. At present, the City and GFPCD are once again seeking legal remedies to resolve disagreements over care for the building. The City of Paterson Historic Preservation Commission (HPC) was the lead agency for seeking out the state grant for funding for this preservation plan (Covello 2000; Page Ayres Cowley 2002; Blesso 2002; Great Falls Historic District and the Public-Private Partnership circa 2006; Andersen 2009; Archimede 2009).

HISTORICAL SOURCES CONSULTED

A number of scholarly sources were consulted in developing this history of the Rogers Locomotive & Machine Works Erecting Shop. The single most important and comprehensive history of the Rogers locomotive works is contained in the three-volume Salvage Archaeology Project report by Edward S. Rutsch (1978). This report dealt with a series of archaeological investigations undertaken from 1973 to 1976 in the Great Falls/S.U.M. Historic District and nearby Dublin neighborhood of Paterson. One of the most important of these investigations transected the parking lot to the east of the erecting shop in advance of the construction of a storm drain between N.J. Route 20 (now N.J. Route 19) and the Passaic River. This investigation uncovered intact subsurface remains of both the Rogers and Grant locomotive works. In particular, the erecting shop parking lot was determined to overlay the demolition debris and foundations of a blacksmith shop dating to the early formative years of locomotive building in Paterson. Not only were the foundation walls of shops from the 1830s to the 1870s uncovered, but machinery and forge bases, furnace waste and discarded machines and machinery parts provided unparalleled information on the organization of space and industrial activities that took place inside and around the shops. The discovery of these archaeological features motivated intensive documentary research to support findings and interpretations. Much important historical information was uncovered, but, unfortunately, it does not appear that any original Rogers company plans or records regarding the erecting have survived, making the archaeological evidence that much more important. The results of this work were also preliminarily presented and summarized in papers by archaeologist Edward Rutsch and historian Brian Morrell published in Northeast Historical Archaeology (1974).

Additional and more focused investigations of the erecting shop and its parking lot took place in 1978 and 1979 following the decision to rehabilitate the erecting shop for use as a museum and offices. These investigations were mostly in the form of monitoring of construction, including parking lot and drainage improvements and excavations within the basement of the building, particularly for a new elevator well at the building's present-day main entry lobby. These investigations were overseen by archaeologist Marjorie Ingle, who prepared a final report (1981) that was also summarized in an article published in Archaeology of Urban America (1982).

The flurry of archaeological activity that took place around the erecting shop in the 1970s was also accompanied by architectural documentation undertaken by the National Park Service's Historic American Engineer Record (HAER). The HAER team's photographer, Jack Boucher, took a series of large-format, black-and-white, documentary photographs in 1971 and 1973. The photograph series of 1971 was taken at

street level while those of 1973 were part of an aerial survey of the entire Great Falls/S.U.M. Historic District. During the summer of 1973, the HAER team also produced a series of measured drawings of the erecting shop that included all four elevations and a first-floor plan, while historian Russell L. Fries prepared a historical overview of the Rogers locomotive works (U.S. National Park Service, HAER 1971, 1973; Fries 1973).

The rehabilitation of the Rogers erecting shop from 1978 to 1982 is documented by plans prepared by project architect David Nathaniel Bilow (Bilow 1978, 1979, 1981, 1982). Further insight into the economic and social goals and methods of the rehabilitation project are contained in the grant application prepared by the City of Paterson's Department of Community Development in 1977. This application resulted in an award from the U.S. Department of Housing and Urban Development (HUD) under the Title IX program. This project largely resulted in the current arrangement by which the City of Paterson owns the erecting shop and the Great Falls Historic Preservation and Development Corporation leases and manages the building. It also laid the groundwork for the establishment of the Paterson Museum, which occupies the first floor and interprets the history of the city and its notable people and events. A good discussion of planning for the museum in contained in the report by Joseph A. Wetzel Associates, Inc. (1978).

During the course of historical background research, a number of other sources were consulted. Many of the historical figures and photographs were gleaned from period sources including, particularly, Locomotives and Locomotive Building, a promotional book and catalogue published for the Rogers company in 1876, and reissued in updated editions in 1886, 1893 and 1896. Additional images were located in the photographic collections of the Passaic County Historical Society. Some historical data was also gleaned from standard 19th- and early 20th-century published histories of Paterson and Passaic County (Trumbull 1882; Nelson 1887; Shriner 1890; Nelson and Shriner 1920). A number of cartographic sources were consulted and analyzed to illustrate the development of the erecting shop site from 1835 to 1915, covering the entire period of locomotive building (Bouton 1835; Freeman 1835; Van Wagoner 1840; Sidney 1850; Perris 1854; Bevan 1860; E. B. Hyde & Company 1877; Packard & Butler 1880; Robinson 1884; Sanborn Map Company 1885, 1899, 1915, 1931; Mueller 1915). Some additional primary research was also undertaken on the uses of the erecting shop for other purposes from 1915 to 1973, mostly through review of deeds and city directories.

Information on the more recent history of the erecting shop was gathered through discussions with staff of the City of Paterson Historic Preservation Commission and the Great Falls Preservation and Development Corporation. This was supplemented by review of some of the relevant documentation including reports and memorandum prepared by the staff, attorneys and project engineers and architects on file at the City of Paterson Historic Preservation Commission.

FIGURES:

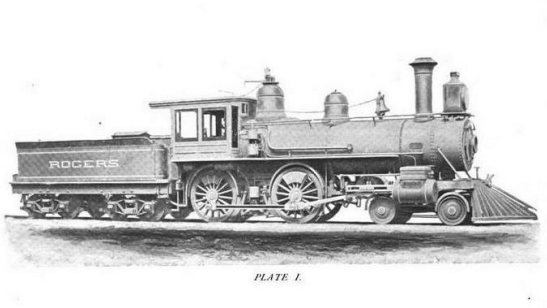


Figure 1. This classic American 4-4-0 locomotive, described by Rogers as "eight-wheels standard," is an example of a type of locomotive assembled in the erecting shop during the 1870s to 1890s. Source: Locomotives and Locomotive Building 1893.

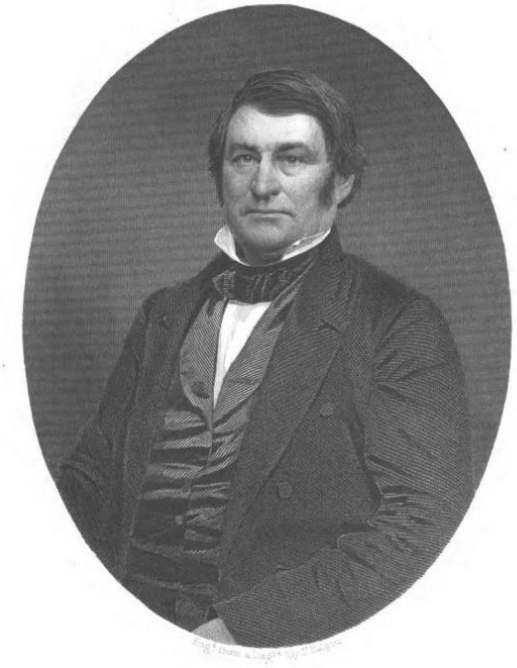


Figure 2. Portrait of Thomas Rogers (1792-1856). Source: Locomotives and Locomotive Building 1893.

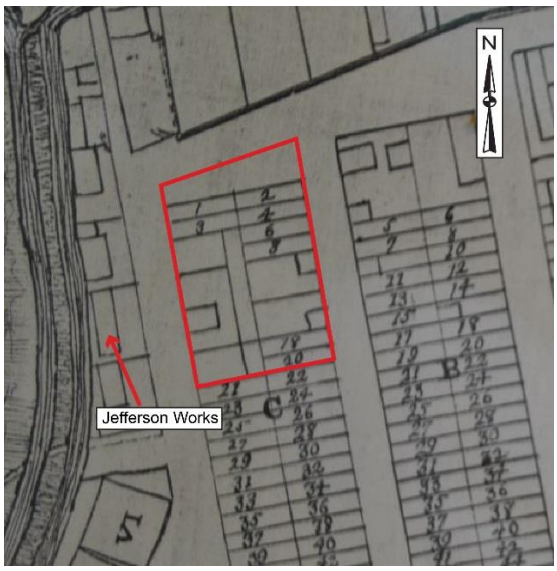


Figure 3. Bouton, R. M. Detail of a Map of 400 Valuable Lots in the town of Paterson, N.J. for Sale by Franklin & Jenkins. 1835. Project site outlined. Thomas Rogers erected a foundry on the project site in 1835.

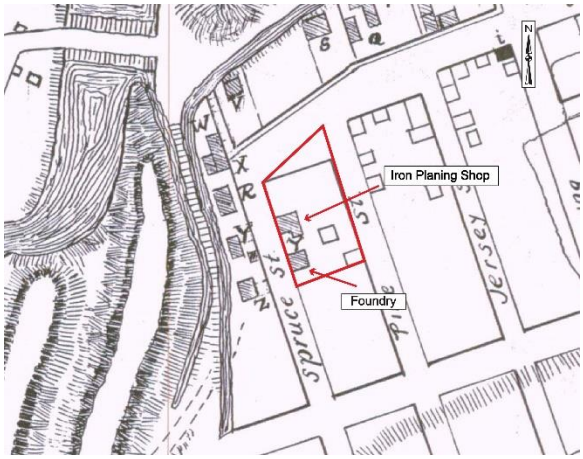


Figure 4. Freeman, U.W. Detail of Map of Town of Paterson N.J. 1835. Project site outlined. Buildings labeled with the letter "Y" represent those of the Rogers machine works. Buildings shown on the erecting shop lot are believed to be the foundry and iron-planing shop. Two other buildings on the Pine Street side of the lot were probably storage buildings.

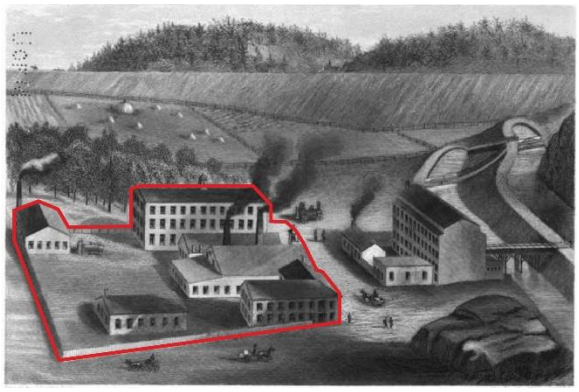


Figure 5. Engraving of the Rogers, Ketchum & Grosvenor machine works complex. Circa 1837. This idealized view is looking south toward Garrett Mountain with Market Street in the foreground. Project site outlined. Buildings that occupied the present-day erecting shop lot in 1837 included a millwright shop, foundry, iron planing shop, locomotive shop and a storage shed. The three-story building near the center of the view was the original Rogers locomotive shop of 1836. Source: Locomotives and Locomotive Building 1893.

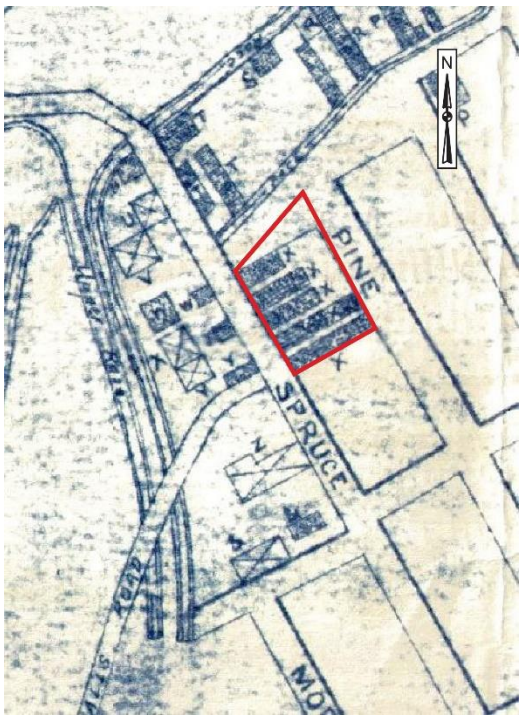


Figure 6. Van Wagoner, C.G. Detail of Map of the Town of Paterson. 1840. Project site outlined. Buildings labeled with the letter "X" are those of the Rogers works.

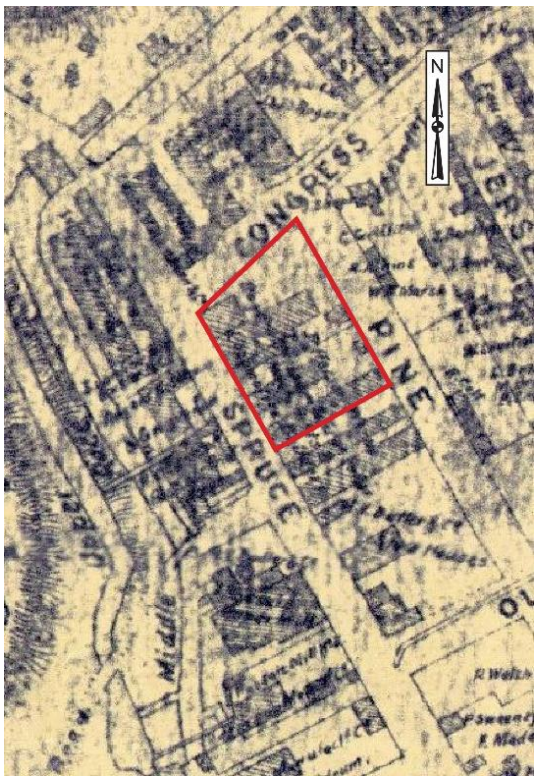


Figure 7. Sidney, J. C. Detail of Map of Paterson from Actual Surveys. 1850. Project site outlined. This map is blurry due to the deterioration of the blueprint from which it was copied, but it shows the arrangement of the Rogers works buildings.

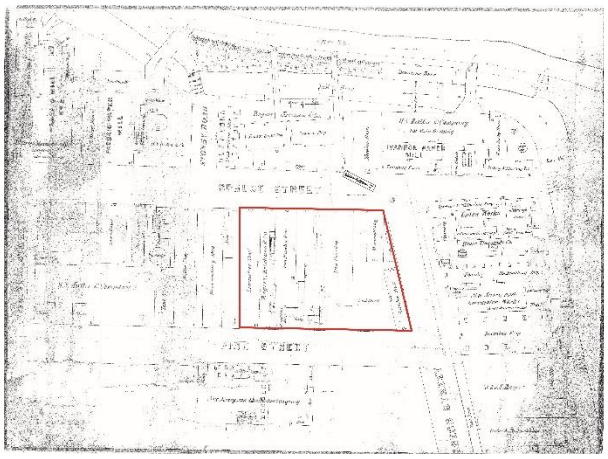


Figure 8. Perris, William. Detail of Paterson Mills. 1854. Project site outlined. The Perris map is useful because it identifies the various buildings and the activities that took place within them. Buildings on the erecting shop lot include the millwright shop, iron foundry, iron-planing shop, locomotive shop and a lumber shed.



Figure 9. Beran, J. Detail of Map of Paterson from Actual Surveys. 1860. Project site outlined.

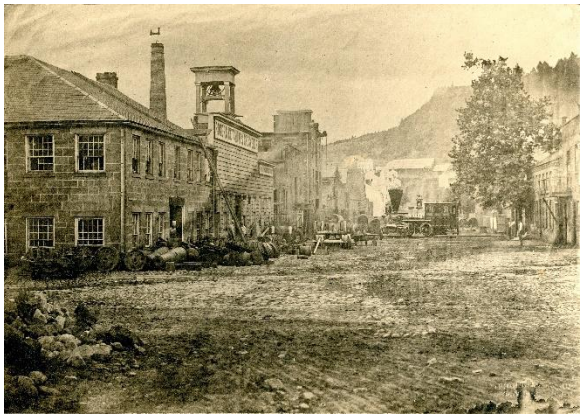


Figure 10. View of the Rogers Locomotive and Machine Company. Circa 1860. This view is looking south on Spruce Street from the corner of Market Street. To the left are the millwright shop, foundry with cupola, iron-planing shop and locomotive shop that occupied the erecting shop site prior to 1871. Stored in the street are patterns and various locomotive parts. The locomotive in the street is pointed toward the original locomotive shop of 1836. Source: Passaic County Historical Society, original negative courtesy of G. K. Livitsanos.



Figure 11. Portrait of Jacob S. Rogers (circa 1824-1901), son of Thomas Rogers. Source: Locomotives and Locomotive Building 1893.

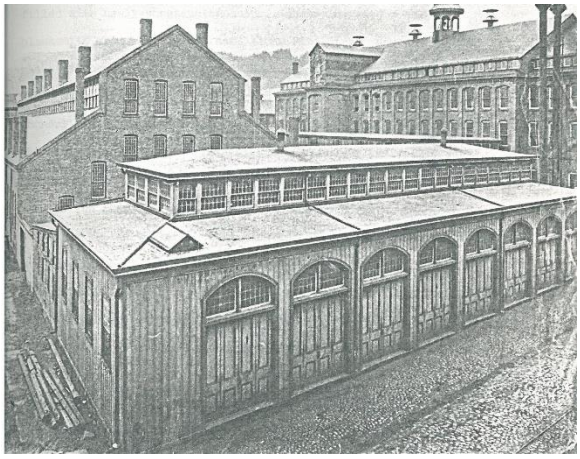


Figure 12. View looking southwest on Market Street of the Rogers Locomotive & Machine Company factory complex. Circa 1873. The east elevation of the erecting shop is to the rear and

right of this view. Note the roof line with sheet-metal vents and a wooden cupola with bell. The building in the foreground is the tender shop of 1870. The building to the rear and left is the blacksmith shop of 1872. These latter two buildings occupied what is now the erecting shop parking lot. Source: Rutsch 1978, photocopy. Original photograph not located at the Passaic County Historical Society in 2016.

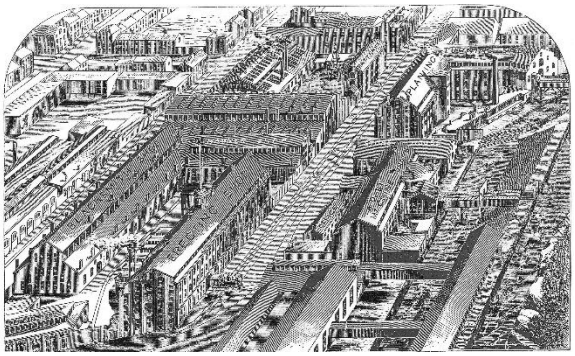


Figure 13. Bird's eye view looking south of the Rogers Locomotive & Machine Works. 1876. The erecting shop is shown in the center foreground. Note the arched bays on the west elevation's first floor and a finished locomotive on Spruce Street. Also present is the bell tower and its locomotive weathervane. Source: Locomotives and Locomotive Building, 1876.

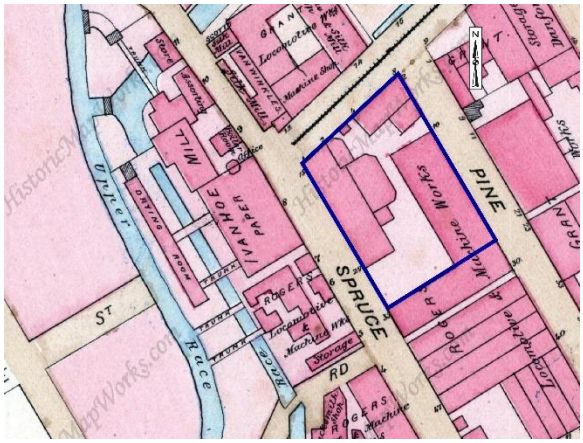


Figure 14. Hyde, E.B. & Company. Detail of Map of Passaic County, New Jersey. 1877. Project site outlined. The building had taken its present form by this date, with the exception of the two-story brick machine shop addition at the southeast corner.

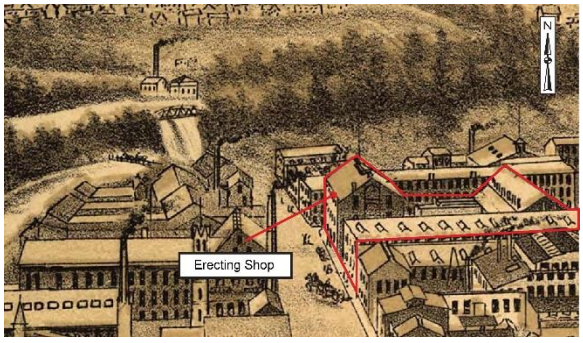


Figure 15. Packard & Butler. Detail of Bird's Eye View of Paterson, N.J. 1880. Project site indicated.



Figure 16. Robinson, E. and R. H. Pidgeon. Detail of Atlas of the City of Paterson. 1884. Project site outlined.

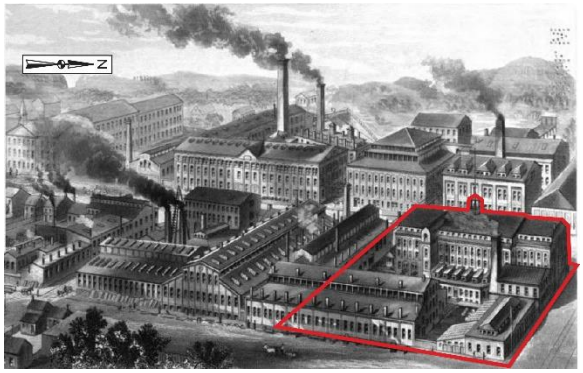


Figure 17. View looking west of the Rogers Locomotive & Machine Works. 1886. Project site outlined. The east elevation of the erecting shop is visible, including the boiler house addition and smokestack. Source: Locomotives and Locomotive Building, 1886.

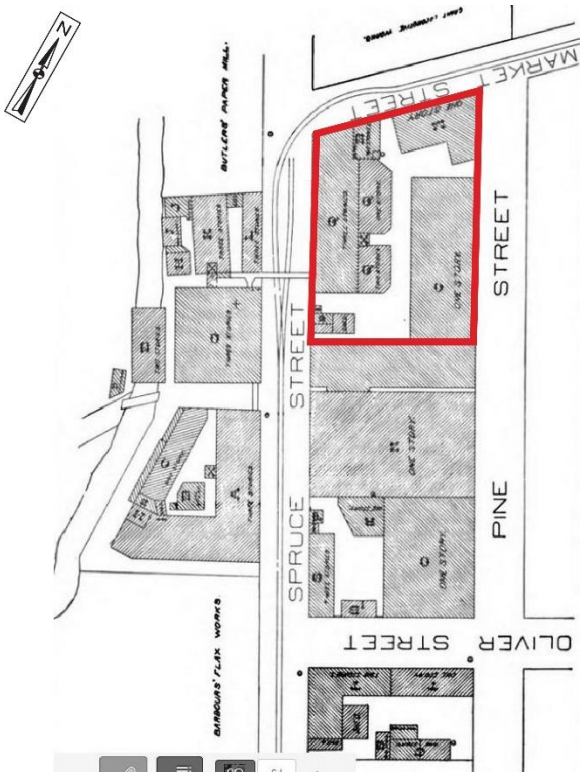


Figure 18. Plan of the Rogers Locomotive & Machine Works. 1886. Project site outlined. Source: Locomotives and Locomotive Building, 1886.

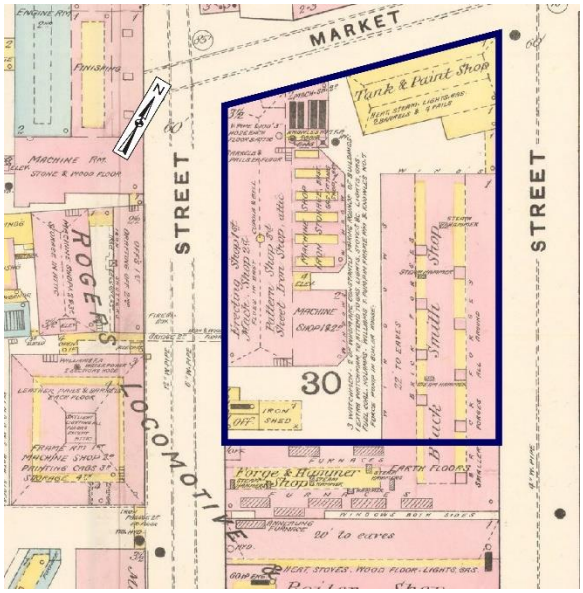


Figure 19. Sanborn Map and Publishing Company. Detail of Insurance Maps of Paterson, New Jersey. 1887. Project site outlined.

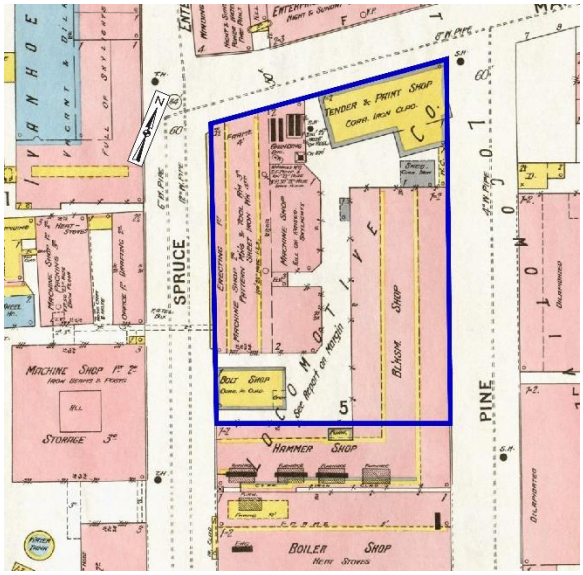


Figure 20. Sanborn-Perris Map Company. Detail of Insurance Maps of Paterson, New Jersey. 1899. Project site outlined.

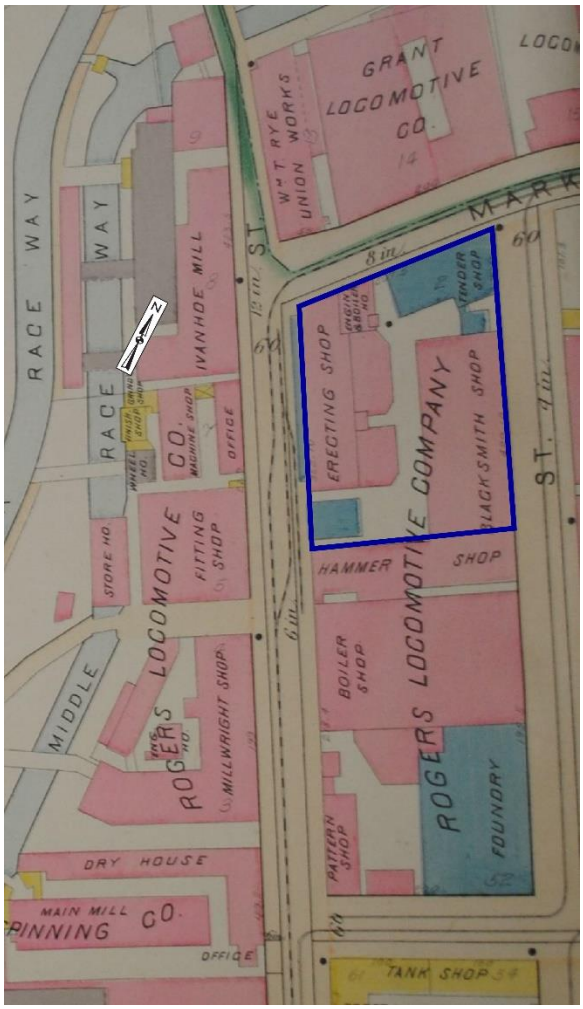


Figure 21. Robinson, E. Detail of Atlas of the City of Paterson. 1899. Project site outlined.



Figure 22. Postcard view looking north on Spruce Street at the Rogers Locomotive Works shop complex. Circa 1900. The erecting shop is on the right side of the street in the far background.

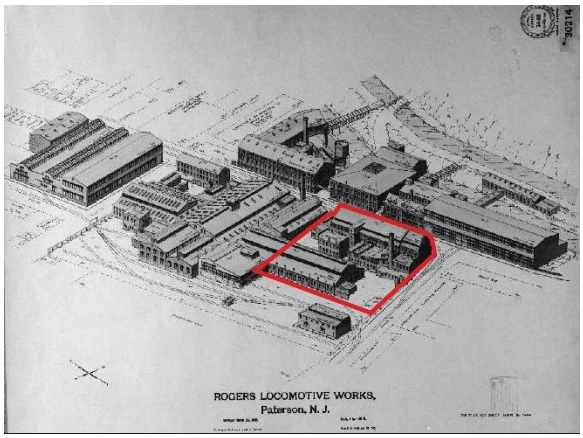


Figure 23. Associated Mutual Fire Insurance Map. Rogers Locomotive Works, Paterson, N.J. 1906. Project site outlined.



Figure 24. View looking southeast of locomotive in Spruce Street with west elevation of the erecting shop in the background. Circa 1907. Source: Paterson Museum, Paterson, New Jersey.



Figure 25. View looking north of locomotive in Spruce Street with west elevation of the erecting shop in the background and to the right. Circa 1907. Source: Passaic County Historical Society, Paterson, New Jersey.



Figure 26. View looking south of locomotive in Spruce Street with west elevation of the erecting shop in the background and to the left. Circa 1907. Source: Paterson Museum, Paterson, New Jersey.

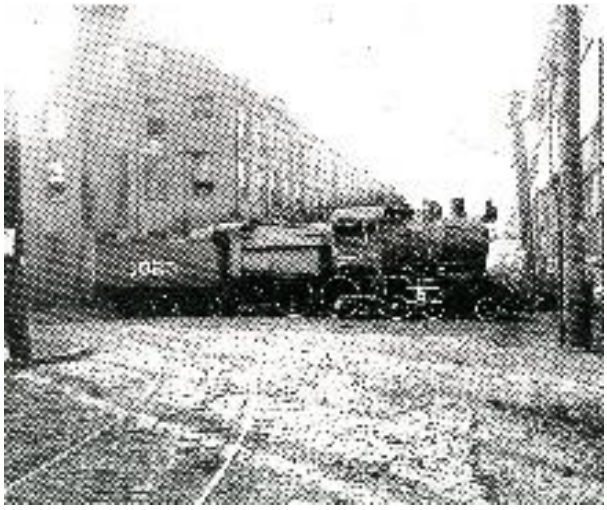


Figure 27. View looking south on Spruce Street from just north of the Market Street intersection with the erecting shop in the background. 1907. Source: Passaic County Historical Society, Paterson, New Jersey.



Figure 28. Mueller, A.H. Detail of Atlas of the City of Paterson, New Jersey. 1915. Project site outlined. Note that the buildings to the east and south of the erecting shop have been demolished.

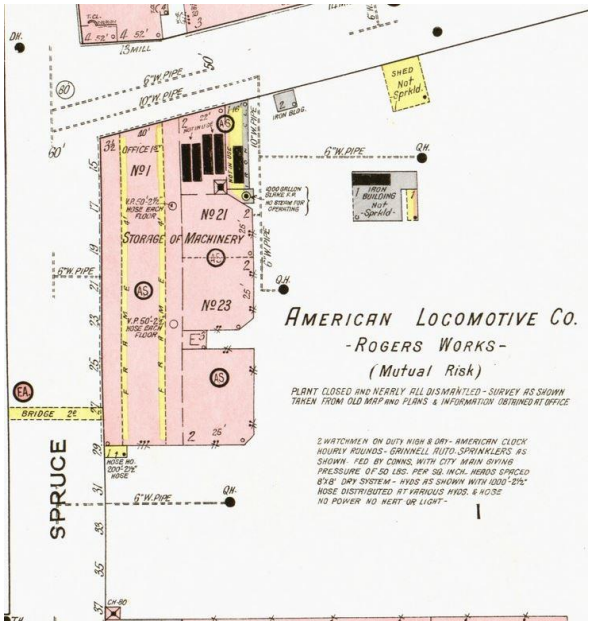


Figure 29. Sanborn Map Company. Detail of Insurance Maps of Paterson, New Jersey. 1915. Project site outlined.



Figure 31. Rogers Locomotive & Machine Company Erecting Shop, west and north elevations. 1971. Photograph by Jack Boucher for the U.S. National Park Service, Historic American Engineer Record.

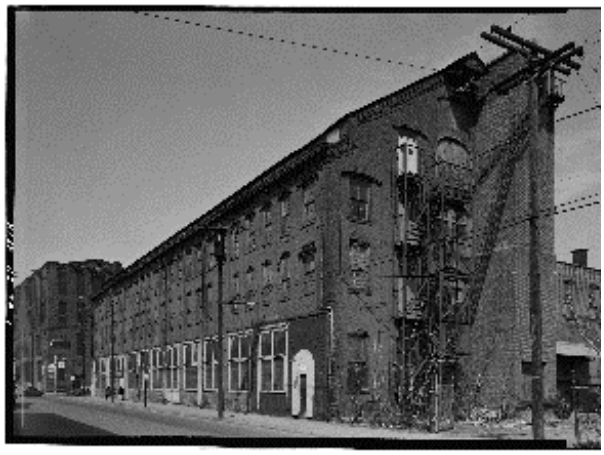


Figure 30. Rogers Locomotive & Machine Company Erecting Shop, west and south elevations. 1971. Photograph by Jack Boucher for the U.S. National Park Service, Historic American Engineer Record.



Figure 32. Rogers Locomotive & Machine Company Erecting Shop, north elevation. 1971. Photograph by Jack Boucher for the U.S. National Park Service, Historic American Engineer Record.



Figure 33. Rogers Locomotive & Machine Company Erecting Shop, cornice detail. 1971. Photograph by Jack Boucher for the U.S. National Park Service, Historic American Engineer Record.



Figure 34. Rogers Locomotive & Machine Company Erecting Shop, date stone. 1971. Photograph by Jack Boucher for the U.S. National Park Service, Historic American Engineer Record.



Figure 35. Rogers Locomotive & Machine Company Erecting Shop, east elevation. 1971. Photograph by Jack Boucher for the U.S. National Park Service, Historic American Engineer Record.

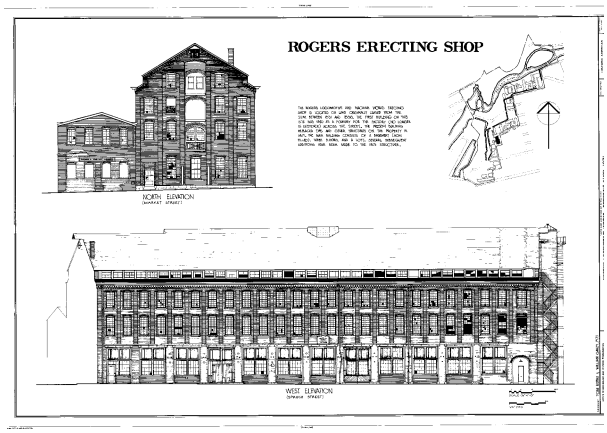


Figure 36. Rogers Locomotive & Machine Company Erecting Shop, West and North Elevations, Sheet 1 of 3. 1973. Measured drawing by Office of Archeology and Historic Preservation, Great Falls/S.U.M. Survey for the U.S. National Park Service, Historic American Engineering Record (HAER).

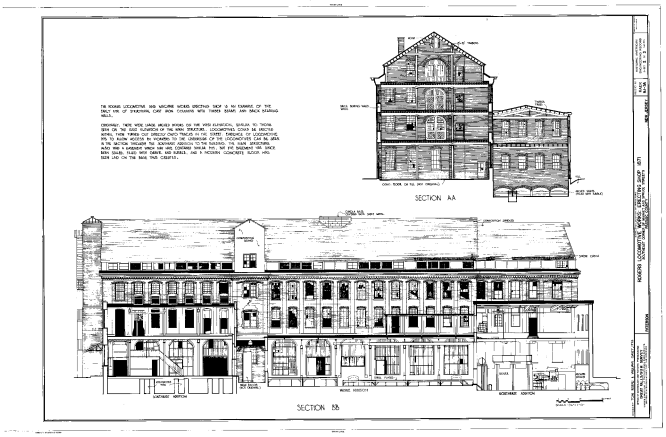


Figure 37. Rogers Locomotive & Machine Company Erecting Shop, Sections, Sheet 2 of 3. 1973. Measured drawing by Office of Archeology and Historic Preservation, Great Falls/S.U.M. Survey for the U.S. National Park Service, Historic American Engineering Record (HAER).

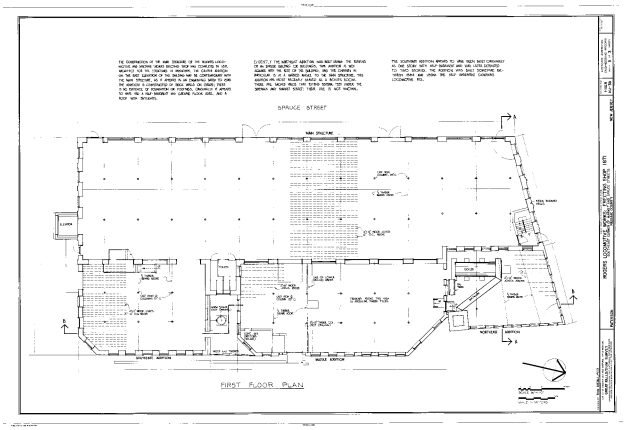


Figure 38. Rogers Locomotive & Machine Company Erecting Shop, First Floor Plan, Sheet 3 of 3. 1973. Measured drawing by Office of Archeology and Historic Preservation, Great Falls/S.U.M. Survey for the U.S. National Park Service, Historic American Engineering Record (HAER).

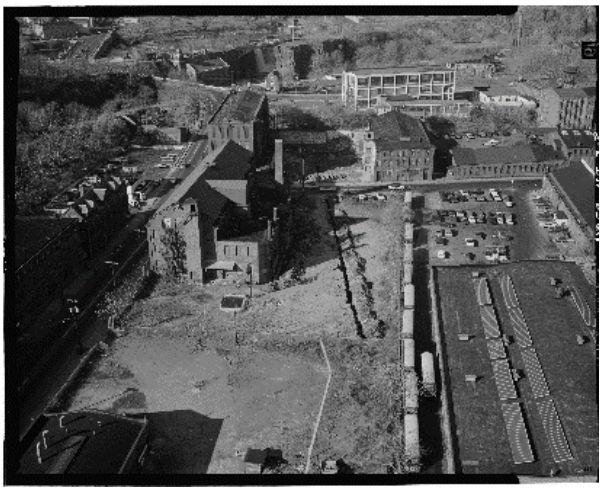


Figure 39. Rogers Locomotive & Machine Company Erecting Shop, aerial view looking north including view of Salvage Archeology Project trench in the parking lot. December 1973. Photograph by Jack Boucher for the U.S. National Park Service, Historic American Engineer Record.



Figure 40. Rogers Locomotive & Machine Company Erecting Shop, serial view looking northwest including view of Salvage Archeology Project trench in the parking lot. 1973. Photograph by Jack Boucher for the U.S. National Park Service, Historic American Engineer Record.

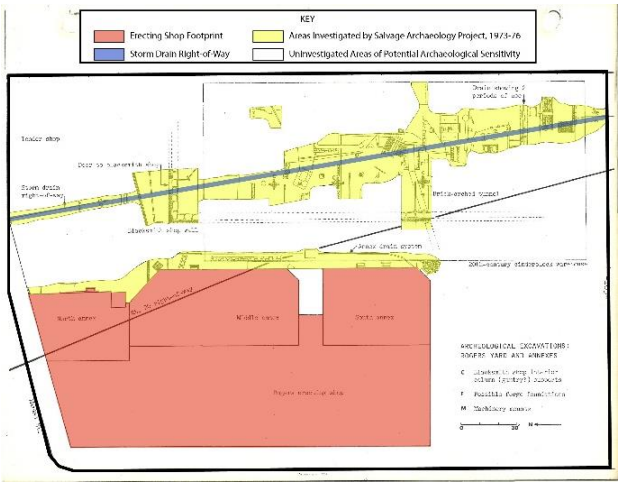


Figure 41. Annotated Plan of Archaeological Excavations in the Rogers Yard (now parking lot) and Annexes. Source: Rutsch, 1978. Areas not impacted and documented by the storm drain and salvage archaeology as shown on this plan should be assumed to be of high archaeological sensitivity. A professional archaeologist should be consulted prior to any ground-disturbing activities extending below existing pavements.

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IV. BUILDING ANALYSIS

ROGERS LOCOMOTIVE WORKS ERECTING SHOP
EXISTING CONDITIONS
EXTERIOR

Built in 1871, the Rogers Erecting Shop was where the Rogers Locomotive Company assembled their locomotives from parts made from the many buildings that made up the company's campus. After 1902, the building was used to produce small switching and tank engines. The building ceased to be used for the construction of locomotives in 1913. In 1919 through the early 1970s. In 1973, Great Falls Development Inc. purchased the vacant building who entered into an agreement with the City of Paterson in 1977 that gave ownership to the City with use by the non-profit. At the end of the 1970s, the building was rehabilitated by the City; work was completed in 1982 and the Great Falls Historic Preservation and Development Corporation and the Paterson Museum took occupancy. This use continues today.

The original brick building is a four-story 25 x 5 bay long rectangle. Brick piers separate full-height recessed bays. Topped by denticulated brick arches, these bays house windows and doors which are capped by denticulated or segmental brick arches. The top of the arched bays abut brick dentils which wrap around the entire building, including the gable ends. These dentils are topped by a wood cornice. The roof is a gable with dropped side aisles on the east and west elevations which create clerestory windows at the fourth floor.

Several one and two-story brick additions were appended to the east elevation in the 19th century. With the exception of the northeast addition which has segmental brick arched windows on the north elevation and a corbelled stringcourse on the east elevation, the additions are largely unadorned with decorative elements limited to the courses of arched brick headers which top most of the window openings. All the sections are topped by wood cornices.

South Elevation, Original Building: Five bay, four stories. The center bay houses loading doors enclosed by wood balconies on the upper floors per the original design and a 36/30 sash on the first. Bays 1 and 5 generally have multi-light sash—36/30 first floor, 30/30 second floor and 24/24 on the third—with an exterior door on the first floor of Bay 5 topped by a 25-light sash. The second bay was converted for emergency egress with fire escape and tongue and groove doors where there were originally multi-light sash. These doors are topped with multi-light fixed sash, 20 lights second floor, 18 lights on the third and a 6-light transom on the fourth. All of the sash and doors date to the late 1970s, early 80s rehabilitation of the building. The fourth bay is occupied by a protruding brick freight elevator block.

Feature	Description	Period	Cond.	Char. Defining Feat.
Site	Asphalt and concrete bordered by Belgian block. Brick walls topped by metal works enclosing this elevation and	1970s rehabilitation	Poor These walls create awkward	No

	mechanical systems. Vines growing up building and overgrown and volunteer trees and shrubs		spaces for maintaining the landscaping	
Foundation	Brick topped by a bluestone string course	Original w/ mult. pointing campaigns	Fair w/some mortar loss	Yes: brick and bluestone No: pointing
Walls	Brick	Original w/ mult. pointing campaigns	Good to fair w/some efflorescence	Yes: brick No: pointing
Window sills and lintels	Brownstone sills Denticulated and segmental brick arched lintels	Original	Fair Inappropriate repointing and repairs below the sills have caused efflorescence and damage at upper floors	Yes
Windows	Wood, multi-light double hung and fixed sash	1970s rehabilitation	Fair	Yes: multi light configuration for each opening No: the existing materials
Doors	3rd bay: upper floors, tongue and groove loading topped by multi-light fixed sash in front of wood balconies 5th bay: tongue and groove door topped by fixed, 25-light sash	1970s rehabilitation	Good	Yes: wood cargo doors originally existed here No: the existing materials
Stairs	Brick risers with bluestone treads	Unknown likely extant 1971	Fair	No
Fire escape	Bay 2, metal fire escape accesses all floors	Unknown a fire escape has existed in this location since 1971	Fair with significant rust and peeling paint	No

Cargo elevator block	Poured concrete foundation, brick body with decorative set-back capped by concrete, flat roof	Unknown extant in 1971	Fair	No
Cornice	Molded wood cornice topping decorative brick dentils	Original	Brick: Good Wood: Poor	Yes
Hoisting mechanism	Wood gable roof with tongue and groove pediment covering pulley	Original	Fair	Yes



Photo 1: South Elevation

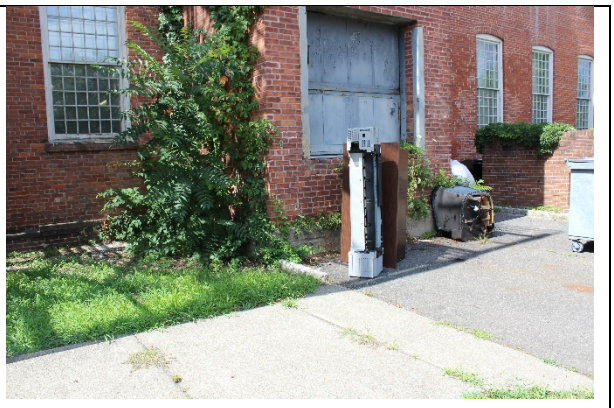


Photo 2: Concrete, volunteer plants and ivy and modern brick walls of the site



Photo 3: The brick foundation and bluestone cap are original features



Photo 4: The windows retain their original brownstone sills and segmented and denticulated brick arched lintels



Photo 5: Exterior door topped by fixed sash with modern brick wall and overgrown vegetation



Photo 6: There has been a fire escape here since at least 1971. It now has significant rust and peeling paint



Photo 7: The elevator block has been extant since at least 1971. It has a decorative set-back capped with concrete



Photo 8: The western wood cornice has a large hole although the brick dentils appear to be in good condition



Photo 9: The eastern wood cornice is in better condition than the west but is still deteriorated



Photo 10: The historic hoist and gable roof are important character defining features that should continue to be maintained

South Elevation, South Addition: Two stories, three bays with a fourth bay within the chamfered southeast corner. This addition was added at some point prior to 1887. It is brick with a terra-cotta capped parapet. The window openings have three-row, segmented brick arched lintels. The basement windows have been bricked in but the upper floors contain 25/25 wood sash.				
Feature	**Description**	**Period**	**Cond.**	**Char. Defining Feat.**
Site	Brick walls enclose mechanical systems in front of this elevation. Within the walls are numerous overgrown volunteer trees and shrubs	1970s rehabilitation	Poor These walls create awkward spaces for maintaining the landscaping	No
Foundation	Brick	Original w/ mult. pointing campaigns	Fair w/significant efflorescence	Yes: brick No: pointing
Walls	Brick	Original w/ mult. pointing campaigns	Fair to poor w/mortar loss and significant efflorescence. The chamfered corner has been repointed due to cracking	Yes: brick No: pointing
Window sills and lintels	Sandstone sills Segmental brick arched lintels	Original	Fair to poor Inappropriate repointing and repairs below the sills have caused efflorescence and damage at upper floors	Yes
Windows	Wood, 25/25 light double hung sash on first and second floor Basement sash bricked in	1970s rehabilitation	Fair w/peeling paint and deterioration esp. at wood sill and bottom rails	Yes: multi-light configuration for each opening No: the existing materials
Cornice	Brick parapet capped by terra cotta	Unknown. The 2nd fl. may be an addition to	Good	Yes

		an earlier 1-story addition		



Photo 11: The south elevation of the south addition. Note the efflorescence under the window sills



Photo 12: The site walls enclose mechanical systems but make landscape maintenance difficult



Photo 13: The southeast corner is a large chamfer that contains windows



Photo 14: The basement window of the chamfered corner has been bricked-in

East Elevation, Original Building: 17 exposed masonry bays, four stories with gable roof with lower narrow shed-roofed side aisles. The south end is covered by the south addition which is adjacent to the original extended masonry stair tower. The stair tower has the same decorative features as the main block and includes a bluestone string course between the first and second floors and large segmented arch framed by four rows of brick. The tower is topped by a frame, gable roofed section enclosed with clapboard (although it was originally sheathed in slate) with an unadorned cornice. To the north of the tower, there are twelve bays followed by 5 bays which are set back. The entire original building is capped by the 4th floor of clerestory windows which sit back from the side aisles with box cornice which extends across the stair tower. The clerestory windows are wood, 8-light awning or fixed. The rest are 20/20 double hung wood. Within the stair tower, the sash 20/20 or 16/16.

Feature	Description	Period	Cond.	Char. Defining Feat.
Site	Bluestone walkways into building and from street and parking lot Small areas of grass w/sculptures, limited decorative plantings and locomotives	Installed recently	Fair the sloped entrance walk is in fairly good condition but the walkway across the building is in poor condition with cracking and loss	No
Walls	Brick	Original w/ mult. pointing campaigns	Good to fair w/some efflorescence and water damage at junctures with boiler house (north addition) and large chimney stack	Yes: brick No: pointing
Window sills and lintels	Brownstone sills Denticulated and segmental brick arched lintels Clerestory windows have wood sills and lintels	Original	Masonry: good Wood: poor	Yes
Windows	Wood, 20/20 double hung and fixed sash	1970s rehabilitation	Fair w/peeling paint and	Yes: multi light

	Clerestory windows are mostly 8-light awning or fixed, wood sash w/some 4-light and 10-light		deterioration esp. at wood sill and bottom rails Clerestory windows are in poor condition w/missing sash, missing glass, loss at sills and rails	configuration for each opening No: the existing materials
Cornice	Box gutters in molded wood cornice at lower side aisles. Aluminum leaders run down elevation	Original design but existing materials likely date to/post-date the 1970s rehabilitation	Gutters: Poor Significant loss of cornice and soffit. At north end, there are holes and water staining on brick cornice below. Leaders: Poor with loose connections and they appear to drain directly on additions w/no splash blocks	Yes. configuration and profile
Roofs	Gable roofs are simulated slate. This same slate is found on the north gable end of the main block. Side aisle roofs are rubber membrane	1970s rehabilitation Membrane roof is likely newer, maybe 1994	Gable roofs and north gable end: good except for the lack of fully installed snow guards Side aisle roofs: poor	Yes
Hexagonal cupola base with simple cornice and asphalt roof	Vertical tongue and groove w/no flashing	Likely original as it appears to be the base for the cupola shown on historic maps	Poor. No flashing has caused water damage through capillary action including	No

			separating, checking and cupping boards	
Stair tower	3-story brick base w/bluestone stringcourse topped by frame upper story with clapboard	Original w/the exception of the clapboard. Originally the frame section was sheathed in slate. The date of the clapboard is unknown	Masonry: Good Clapboard: Poor including rot, warp and lift. The wood is especially poor where it meets gable roof where there is no flashing	Yes



Photo 15: The east elevation has numerous additions



Photo 16: The bluestone entrance is new and in fairly good condition



Photo 17: The bluestone sidewalks are failing

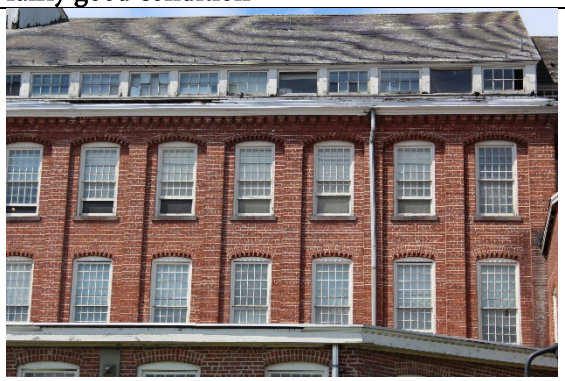


Photo 18: While the masonry is generally in good condition, there are signs of water damage at the juncture with the boiler house



Photo 19: The wood sash windows are generally 20/20 but some of the stair tower windows are 16/16



Photo 20: The clerestory windows are in fair to poor condition with loss of sash, glass and wood components



Photo 21: The box cornice at the side aisles is in poor condition with significant loss



Photo 22: At the northern end, there is water staining on the masonry below holes in the cornice



Photo 23: The original wood base of the cupola is in poor condition. No flashing was installed which has caused water damage



Photo 24: The stair tower has a nice bluestone stringcourse and four-courses of brick at the arched opening



Photo 25: The wood section on top of the masonry tower is in poor condition



Photo 26: No flashing has caused significant deterioration at the wood's juncture with the roof

East and North Elevations, South Addition: Two stories, five bay east, three bay north. The northeast corner has a small chamfer. The north elevation has a terra-cotta capped parapet like the south. The east elevation has a wood cornice with a molded center band. With the exception of the second floor, east windows, all of the window openings have three-row, segmented brick arched lintels. The basement windows have been bricked in or have louvered wood but the upper floors contain 25/25 wood sash. There is a paver-lined recess on the east side of this addition with volunteer plants and ivy.

Feature	Description	Period	Cond.	Char. Defining Feat.
Site	Stone-lined recess w/ivy growing up wall	Unknown	The ivy should be removed	No
Foundation	Brick	Original w/ mult. pointing campaigns	Good	Yes: brick No: pointing
Walls	Brick Stars can be found on the north wall above the first floor windows	Original w/ mult. pointing campaigns	Fair w/significant efflorescence. The southeast corner at the leader appears to have water staining, although it is likely that it is no longer active	Yes: brick No: pointing
Window sills and lintels	Sandstone sills Segmental brick arched lintels	Original	Fair to poor Inappropriate repointing and repairs below the sills have caused significant efflorescence and damage at upper floors	Yes
Windows	Wood, 25/25 light double hung sash on first and second floor Basement sash have been bricked in or infilled with louvered wood or tongue and groove doors. One opening	1970s rehabilitation Basement windows likely changed earlier	Fair w/peeling paint and significant deterioration of 1st floor windows esp. at wood sill	Yes: multi-light configuration for each opening No: the existing materials

	has steel surround with brick infill		and bottom rails	
Cornice	Brick parapet capped by terra cotta on north Wood box gutter on east with center band and large cast iron leader	Unknown. The 2nd fl. may be an addition to an earlier 1-story addition	Brick parapet: good Wood cornice: fair	Yes
Chimneys	2 tall brick chimneys w/sandstone caps	Original to this addition?	Good	Yes
Window A/C units	At second floor, north side	Modern	Poor Window units are found throughout the building. This one is noteworthy as it is above the walkway and dripping causing splashing up the north brick wall which will eventually cause damage	No



Photo 27: The east elevation of the south addition



Photo 28: The north elevation of the south addition



Photo 29: Paver lined recess in front of the south addition has volunteer plants and ivy that should be removed



Photo 30: There is efflorescence and repointing behind this leader. According to previous report, this is an issue that has been repaired and is no longer active



Photo 31: The efflorescence below the window sills of this addition is particularly acute



Photo 32: The first floor windows have buckling outer wood sills and bottom rails

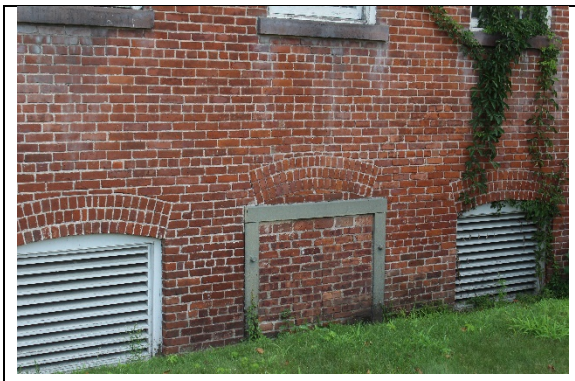


Photo 33: The basement windows have been infilled



Photo 34: The east elevation has a wood cornice that is in fair condition. The terra cotta cap of the parapet of the north elevation is in good condition

Center Addition: Constructed by 1887, this one-story, 9-by-2 bay non-rectangular brick addition has a flat roof and box cornice. The roof has newer rolled roofing. The 25/25 wood sash are topped with segmented brick arches with two rows of brick and have bluestone sills. The basement windows, now infilled with wood louvers, are topped with segmented brick arches with three rows of brick and have brownstone sills. There is a door in the 3rd bay with a tongue and groove door topped by a 25-light sash. A brownstone landing with bluestone steps lead up to the door with metal balustrade that matches the metal work along the site's perimeter fencing. Like the southern addition, there is a paver-lined recess surrounding this addition with volunteer plants and ivy.

Feature	Description	Period	Cond.	Char. Defining Feat.
Site	Stone-lined recess surrounds this addition w/ivy growing up wall	Unknown	The ivy should be removed	No
Foundation	Brick	Original w/ mult. pointing campaigns	Good	Yes: brick No: pointing
Walls	Brick w/ties north of bays 5 and 7	Original w/ mult. pointing campaigns	Fair w/significant efflorescence and loss of mortar especially at the southeast corner	Yes: brick No: pointing
Window sills and lintels	Sandstone sills Segmental brick arched lintels	Original	Fair to poor Inappropriate repointing and repairs below the sills have caused significant efflorescence and damage	Yes
Windows	Wood, 25/25 light double hung sash on east elevation Basement sash have been infilled with brick or louvered wood. There is a remnant of an earlier steel piece embedded in the brick.	1970s rehabilitation Basement windows likely changed earlier	Fair w/peeling paint and significant deterioration esp. evident at the wood sills	Yes: multi-light configuration for each opening No: the existing materials
Cornice	Wood box gutter with decorative top band and aluminum leaders	Original?	Fair w/some loss at soffit and of	Yes

			decorative top band	
Stairs	Brownstone base, four brownstone risers with bluestone treads and landing and metal balustrade	1970s rehabilitation?	Fair to poor w/significant efflorescence	Yes



Photo 35: The one-story center addition



Photo 36: The ivy growing up this addition should be removed



Photo 37: There is efflorescence and mortar loss on this addition especially at the southeast corner



Photo 38: Most of the infilled basement windows have louvers but some are bricked



Photo 39: The 25/25 light sash are in fair condition with noticeable deterioration of the outer wood sill



Photo 40: The entrance in the 3rd bay is in fair to poor condition. The tongue and groove door needs finish



Photo 41: The stairs and landing are in poor condition with efflorescence, lost mortar and delaminating stone



Photo 42: The wood cornice is in fair condition with loss of the decorative top molding and at the soffit at the leaders

North Addition Boilerhouse and Smokestack: Two-story, 5 by 4-bay, brick addition with decorative brick belt course between the two floors and across the smokestack. The north elevation of the addition follows Market Street, causing the northeast corner of the addition to be less than a 90-degree angle. The window openings are topped with segmented brick arches with two rows of brick and have sandstone sills. On the north elevation, the second floor window lintels are segmented and denticulated. Remaining sash are 12/12. There is a pair of tongue and groove doors at the basement level topped by a louvered transom within a segmented brick arch with three rows of brick. Following the 1970's rehabilitation, the second floor was opened to allow ventilation for HVAC equipment, but originally had a gable roof and sections of the decorative wood cornice remain. It is adjacent to a 200 ft. brick smokestack; both were built together and were extant by 1887.

Feature	Description	Period	Cond.	Char. Defining Feat.
Site	Brick walls enclose mechanical systems and access to the basement doors with concrete pad There are gates along Market Street A chain link fence lines the east side of the site Belgian block curbing separates the parking from the pedestrians	1970s rehabilitation	Poor The site generally looks tired. Ivy is climbing up the walls. The brick walls around the basement access makes landscaping maintenance difficult	No
Foundation	Brick Brownstone pier to north of door	Original w/ mult. pointing campaigns	Good to fair with limited efflorescence and pointing loss	Yes: brick and brownstone No: pointing
Walls	Brick w/decorative brick belt course	Original w/ mult. pointing campaigns	Fair w/significant efflorescence on east elevation	Yes: brick No: pointing
Window sills and lintels	Sandstone sills Segmental brick arched lintels	Original	Fair to poor Inappropriate repointing and repairs below the sills have caused significant efflorescence	Yes

			and damage. This is especially evident on the east elevation	
Windows	Boarded up windows on first floor, east elevation due to broken glass. 6/6 sash on first floor, north elevation Second floor, wood, 12/12 light double hung sash in various states of completeness with some fully complete and others with no glass and few muntins surviving	Date unclear. Did they rehab them in the 1970s and then leave them exposed to the elements?	Poor. The sash in the open section should be removed The first floor windows on the north elevation appear to be in fair condition with deterioration evident in the wood sills although assessment was hampered by the sidewalk protection	No
Doors	Paired, tongue and groove doors topped by a louvered transom	1970s rehabilitation	Fair with peeling paint and deterioration at the bottom	Yes
Cornice	Building originally had a shallow gable. The western box gutter cornice of the north elevation remains; the eastern has been lost. Remnants of the simple east cornice with decorative top band and frieze remain	Original?	Poor. The wood remaining wood cornices should be removed and the brick capped	The cornices were originally but no longer are after the 1970s rehabilitation
Smokestack	200 ft. brick stack with decorative brick belt course, clean out at the bottom and tie at the top	Original	Fair w/significant efflorescence and loss of mortar especially just	Yes

			below decorative belt course	



Photo 43: East elevation of the north addition and smokestack



Photo 44: North elevation of the north addition



Photo 45: The brick walls that enclose mechanical equipment and the basement access make landscape maintenance difficult. Ivy is growing up the walls



Photo 46: The remaining sash are in various states of disrepair with missing glass and muntins



Photo 47: Deterioration is evident in the outer wood sills of the north windows



Photo 48: The door into the basement is in fair condition



Photo 49: The east cornice has been almost totally lost



Photo 50: The eastern half of the north cornice has also been lost



Photo 51: The brick of the smokestack below the decorative beltcourse has significant efflorescence and lost mortar



Photo 52: The top of the smoke stack has a band around it. The top half appears to be in better condition than the lower half

North Elevation, Original Building: Five bay, four stories. The center bay houses loading doors enclosed by wood balconies on the upper floors topped by a gable roof over the hoisting mechanism. The flanking bays contain multi-light sash—24/24 on the 3rd and 4th floors and 30/24 on the 2nd floor. The first floor contains multi-light sash and a door in the eastern bay. and a 36/30 sash on the first. All of the sash and doors date to the late 1970s, early 80s rehabilitation of the building.

Feature	Description	Period	Cond.	Char. Defining Feat.
Foundation	Brownstone w/bluestone cap	Original w/ mult. pointing campaigns	Fair w/loss of stone and mortar	Yes
Walls	Brick	Original w/ mult. pointing campaigns	Good to fair w/some efflorescence	Yes: brick No: pointing
Window sills and lintels	Brownstone sills Denticulated and segmental brick arched lintels	Original	Fair Inappropriate repointing and repairs below the sills have caused efflorescence and damage at upper floors	Yes
Windows	Wood, multi-light double hung	1970s rehabilitation	Fair with peeling paint, deterioration of the sills and bottom rails	Yes: multi light configuration for each opening No: the existing materials
Doors	3rd bay: upper floors, tongue and groove loading topped by multi-light fixed sash in front of wood balconies First floor tongue and groove door topped by 6-light transom with bluestone steps	1970s rehabilitation	Good to fair All doors need new finish	Yes: wood cargo doors originally existed here No: the existing materials
Cornice	Molded wood cornice topping decorative brick dentils	Original	Brick: Good Wood: Fair to good w/minor loss of	Yes

			decorative cap molding. Needs paint	
Hoisting mechanism	Wood gable roof with tongue and groove pediment covering pulley	Original	Good	Yes
Chimney	Brick on west gable roof	Original	Good	Yes



Photo 53: The north elevation of the original building



Photo 54: The original brownstone foundation w/blue stone cap at the north addition. The foundation is in fair condition



Photo 55: The north windows have efflorescence beneath the sills and deterioration of the outer wood sill



Photo 56: Multi-light wood sash and tongue and groove cargo doors of the north elevation



Photo 57: The original hoisting mechanism is covered by a gable roof for protection



Photo 58: The north elevation cornice is in fair condition with minimal loss of some decorative elements

West Elevation, Original Building: 25 masonry bays, four stories with gable roof with lower narrow shed-roofed side aisles. The first floor has 12 bays of paired doors with diagonal tongue and groove panels topped by 16-light sash topped by a 12-light transom with heavy strap hardware. The lintels for these openings are steel beams adorned with four-rosettes. These are found on the building across the street and must be a signature of the Rogers Company. A brownstone course tops the steel lintels. This first floor system is topped by the same recessed masonry bays, denticulated and segmented arch articulation and denticulated cornice found on the other elevations of this original building. Within the bays are multi-light, double hung sash—25/20 on the second floor and 20/20 on the third. A brownstone date stone adorns this façade attesting to the full history of the site with 1836 prominent on the keystone below which reads 1871 rebuilt by Rogers Locomotive Works. At the southern bay sit paired, arched tongue and groove doors with heavy strap hardware. The second floor window above this door is, unusually, 30/24. This is the largest window on this elevation. These are topped by 8-light awning or fixed clerestory windows.

Feature	Description	Period	Cond.	Char. Defining Feat.
Foundation	Brownstone	Original	Fair w/some pitting	Yes
Walls	Brick Steel Brownstone	Original w/ mult. pointing campaigns	Brick: Good to fair w/some efflorescence and pitting esp. at north end. Lower courses have been power washed or stripped. They need repointing Steel: Good Brownstone: Needs repointing. One section is missing	Yes
Window sills and lintels	Brownstone sills Denticulated and segmental brick arched lintels Clerestory windows have wood sills and lintels	Original	Masonry: good Wood: poor	Yes

Windows	Wood, 25/20, 20/20 or 30/24 double hung sash Clerestory windows are mostly 8-light awning or fixed, wood sash w/some 4-light and 10-light	1970s rehabilitation	Fair w/peeling paint and deterioration esp. at wood sill and bottom rails Clerestory windows are in poor condition w/missing sash, missing glass, loss at sills and rails Some have been removed to install A/C units	Yes: multi light configuration for each opening No: the existing materials
Doors	12 sets of paired doors with diagonal tongue and groove panels topped by 16-light sash topped by a 12-light transom with heavy strap hardware 1 set of paired, arched tongue and groove doors with heavy strap hardware	1970s rehabilitation	Oversized doors are generally in poor condition. They don't fit properly in their openings, there is loss of wood, glass needs reglazing. There is one broken pane Arched doors are in good condition	
Cornice	Box gutters in molded wood cornice at lower side aisles. Aluminum leaders run down elevation	Original design but existing materials likely date to/post-date the 1970s rehabilitation	Gutters: Poor Significant loss of cornice and soffit. At north end, there are holes and water staining and deterioration	Yes. configuration and profile

			on brick cornice below. Leaders: Poor with loose connections and loss at the soffit	
Roofs	Gable roof are simulated slate. Side aisle roofs are rubber membrane	1970s rehabilitation Membrane roof is likely newer, maybe 1994	Gable roofs: good except for the lack of fully installed snow guards Side aisle roofs: poor	Yes
Hexagonal cupola base with simple cornice and asphalt roof	Vertical tongue and groove w/no flashing	Likely original as it appears to be the base for the cupola shown on historic maps	Poor. No flashing has caused water damage through capillary action including separating, checking and cupping boards	No
Window A/C units	Throughout	Modern	Poor Window units are found throughout the building. Their dripping have damaged the wood doors	No



Photo 59: The west elevation



Photo 60: The datestone provides a full history of the site



Photo 61: The lower brick piers were painted and power washed to remove the paint. The brick is noticeably different than the upper brick.



Photo 62: Splash up from dripping window A/C units causes the lower brick and doors to be constantly wet. This will eventually cause damage.



Photo 63: A section of the brownstone course is missing



Photo 64: The paired doors were installed in the 1970s rehabilitation



Photo 65: Generally speaking, the doors are not in very good condition



Photo 66: These doors also date to the 1970s; they are in better condition



Photo 67: The cornices are in fair to poor condition with some loss especially at the leaders



Photo 68: The cornice needs repair and repainting

ROGERS LOCOMOTIVE WORKS ERECTING SHOP
EXISTING CONDITIONS
INTERIOR

During the 1970s, rehabilitation, a modern elevator and stair tower was inserted into the building, roughly centered on each floor. Modern finishes were also added to create office spaces. The perimeter walls remain exposed brick but generally speaking, the rest of the finishes are modern.

Today the first floor is occupied by the Paterson Museum and the upper floors are office space rented out and administered by the Great Falls Preservation and Development Corp. with several vacant units.

First Floor, the Paterson Museum: The main entrance to the building accesses a modern glass lobby, inserted into the original building with the elevator and stair tower to the north. To the south is the entrance to the Paterson Museum which takes up most of the first floor. The exhibits occupy one large space. To the east, within the center addition, there are utilitarian non-exhibit spaces including the museum offices and archives to the north and public bathrooms to the south.

Feature	Description	Period	Cond.	Char. Defining Feat.
Floor	Poured concrete	Unknown	Good	Yes
Walls	Exterior walls are exposed brick Original columns There are modern walls inserted	Original	Good	Yes
Windows	Multi-light, double hung sash with interior storms and multi-light sash on the doors topped by transom	1970s rehabilitation	Good The interior storms are in good condition. Window deterioration is more evident on the exterior	Yes: multi light configuration for each opening No: the existing materials
Window sill	Plain wood sills supported by plain wood aprons	Original?	Good	Yes
Doors	On the west wall, there are paired oversized doors	1970s rehabilitation	Poor It was difficult to fully assess the doors as there are	No?

			exhibits and collections in front of them but these doors do not fit their openings, leaving large gaps on both sides.	
Ceiling	Open floor framing	Original	Good	Yes
HVAC system	Piping running across the ceiling	1970s rehabilitation	Poor they drip regularly on the museum collections	No



Photo 69: A new glass vestibule was inserted into the old building providing an entrance into the museum



Photo 70: The Paterson Museum



Photo 71: The architectural features of this industrial building remain visible behind the museum collections



Photo 72: The east wall showing infilled windows behind museum exhibits



Photo 73: The museum has a diverse collection including larger pieces



Photo 74: The HVAC system is inadequate and often has condensation on the piping that drips onto the museum collections



Photo 75: The archival storage of the museum is inadequate causing collections to be stored wherever there is space



Photo 76: The museum needs more shelving to store its vast collections

First Floor, the Hannah Gallery: A large open room in the southeast corner of the first floor used as gallery space. There is an office inserted at the northern end of the room. This dates to the 1970s and is occupied by the Great Falls Preservation and Development Corp.				
Feature	**Description**	**Period**	**Cond.**	**Char. Defining Feat.**
Floor	Narrow gauge floor	Original?	Good	Yes
Walls	Exposed brick Original columns North wall is modern dry wall	Original	Good to fair w/water staining in the southeast and southwest corners. The southeast corner is from a previous leak with downspouts	Yes
Windows	Multi-light, double hung sash with interior storms	1970s rehabilitation	Good The interior storms are in good condition. Window deterioration is more evident on the exterior	Yes: multi light configuration for each opening No: the existing materials
Window trim	Plain wood trim and sills supported by plain wood aprons	Original?	Good	Yes
Doors	On the west wall, there are the arched openings of the original building. The northern most bay has been infilled with glass and a glass door. The center one is filled in for display. The southern bay is a square opening with heavy wood lintel and evidence of an earlier window above	Original with 1970s infill	Good	Yes
Ceiling	Open floor framing with 4 boxed out openings	Original	Good Water staining in the brick in the	Yes

			southeast corner extends to this framing	
Storage	Through the southwest opening, there is an area used for storage and for extra tables and chair	Original perimeter with modern inserted walls and shelving	Not used efficiently	No

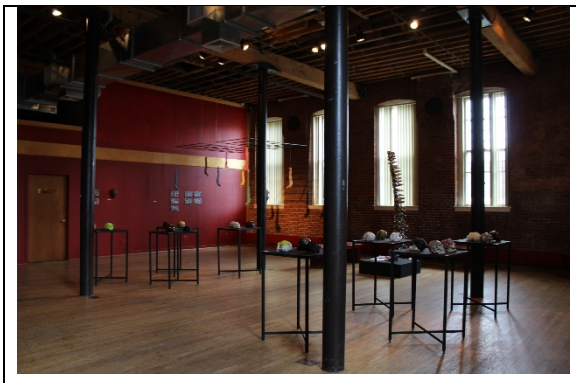


Photo 77: The Hannah Gallery



Photo 78: Water staining in the southeast corner on the brick and wood framing. According to a previous report, this was caused by a downspout and is no longer active



Photo 79: Water staining in the southwest corner



Photo 80: The arched openings of the original building remain on the west wall



Photo 81: Boxed out openings in the ceiling enabled equipment to travel between floors



Photo 82: This closed off section, to the west of the galley, is now used for storage

Second Floor, HomeCare Options: At the southern end of the second floor off the modern elevator lobby is a long-term tenant who occupies two spaces both the one to the east and to the west. They are an early tenant so most of the finishes date to the 1970s.				
Feature	**Description**	**Period**	**Cond.**	**Char. Defining Feat.**
Elevator lobby	Carpet, modern walls, exposed floor framing at ceiling	Original ceiling but rest 1970s rehabilitation	Poor tired finishes but also very dark	No
Floor	Carpet Areas of exposed diagonal, narrow gauge wood	1970s rehabilitation Wood floor original?	Carpet is in poor condition. It is old but also buckling in many places. Wood is good	No
Walls	The perimeter walls are exposed brick. Original columns remain Modern walls have been inserted	Original and 1970s rehabilitation	Good to fair w/water staining and efflorescence on the south wall	Yes
Windows	Multi-light, double hung sash with interior screens and storms	1970s rehabilitation	Good The interior storms are in good condition. Window deterioration is more evident on the exterior	Yes
Window trim	Plain wood trim and sills supported by plain wood aprons	Original?	Good	Yes
Original window openings	The east wall of the original building is now an interior wall. The window openings have been converted to bookshelves or plastered over	Original with 1970s infill	Good	Yes
Ceiling	Open framing, modern drop ceiling and in the south addition, there are original skylights	Original with 1970s infill	Good to fair w/some water staining	Original features, Yes
Freight elevator	At the southern end of this floor is a hall that leads to the	1970s rehabilitation	Good	No

cargo doors and emergency egress	door openings on the south elevation including the modern freight elevator, the arched tongue and groove with cross buck cargo doors and the tongue and groove fire escape door topped by a multi-light transom			



Photo 83: The modern elevator lobby of the second floor is uncomfortably dark

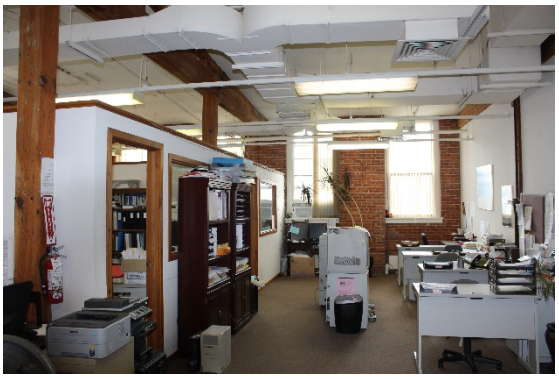


Photo 84: The eastern office space

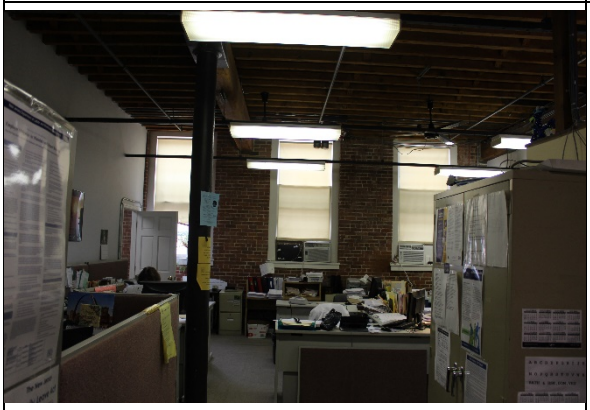


Photo 85: The western office space



Photo 86: An original exterior wall is now an interior wall. Its architectural features are still visible. Windows are now bookshelves



Photo 87: The west side of the original exterior wall. The windows have been plastered over but the decorative arches remain exposed

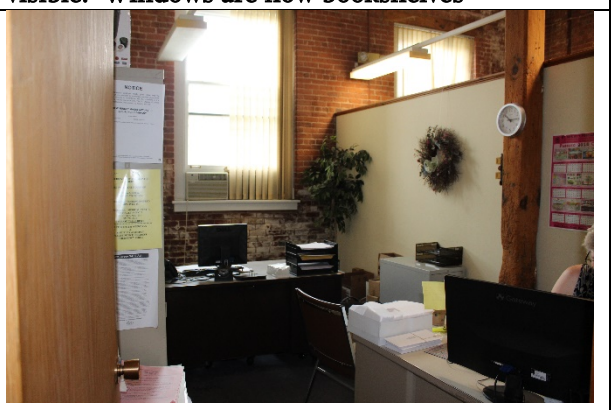


Photo 88: Significant efflorescence below the window on the south wall. This is from an improper repair of the exterior sill



Photo 89: Signficant efflorescense in the southwest corner of the south addition



Photo 90: The original skylights of the south addition remain



Photo 91: The south hall provides access to the freight elevator and the emergency egress



Photo 92: The cargo doors and the door to the fire escape all date to the 1970s rehab

Second Floor, Vacant: At the northern end of the second floor is a space most-recently occupied by the Paterson UEZ. It is currently vacant but used by the Paterson Museum for storage especially oversized bound newspapers.				
Feature	**Description**	**Period**	**Cond.**	**Char. Defining Feat.**
Hall to Office from elevator	Carpet, modern walls, exposed floor framing at ceiling	Original ceiling but rest 1970s rehabilitation	Poor tired finishes but also very dark	No
Floor	Exposed diagonal, narrow gauge wood	Wood floor original?	Good	Yes
Walls	The perimeter walls are exposed brick. Original columns remain Modern walls have been inserted	Original and modern rehabilitation	Good	Yes
Windows	Multi-light, double hung sash with interior screens and storms	1970s rehabilitation	Good The interior storms are in good condition. Window deterioration is more evident on the exterior	Yes
Window trim	Plain wood trim and sills supported by plain wood aprons	Original?	Good	Yes
Ceiling	Modern drop ceiling with exposed large beams	Modern with original beam	Good	Original beams, Yes
Cargo doors and emergency egress	Arched tongue and groove with cross buck cargo doors and modern door to original stair tower	1970s rehabilitation and modern	Good	No



Photo 93: Unoccupied office space at the northern end of the building is a mix of old and new



Photo 94: The entrance lobby to the space

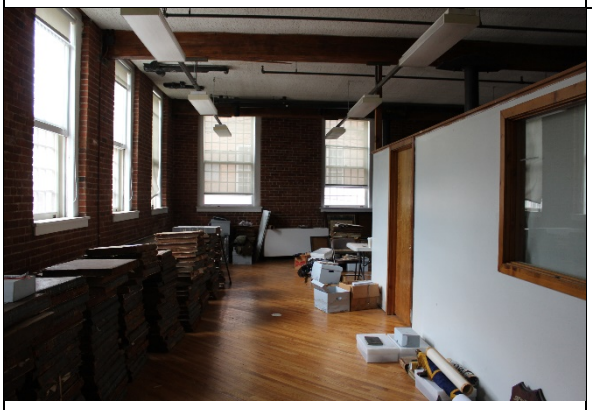


Photo 95: The Paterson Museum is now storing collections in this space especially oversized bound newspapers

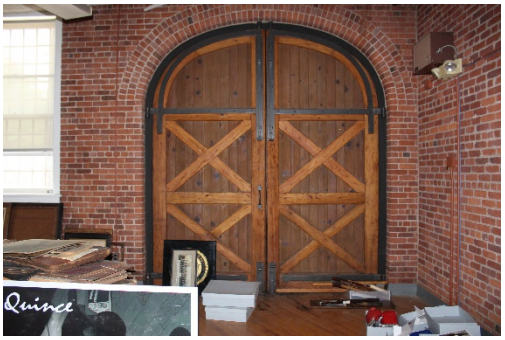


Photo 96: These cargo doors date to the 1970s rehab

Second Floor, exposed 2nd floor, North Addition: During the 1970s rehabilitation, the roof was removed from the second floor of the north addition to provide open space for mechanical equipment. The roof framing was left, as were the brick walls, windows and cornices. Recently, sections of the roof framing collapsed. The rest were dismantled by GFPDC. Sections of cornice and brick have fallen causing the erection of the sidewalk bridge over the Market Street sidewalk to protect pedestrians from further collapse. The sash are in various states of decay including missing glass and muntins. The hazardous conditions of this addition should be remedied immediately.

Feature	Description	Period	Cond.	Char. Defining Feat.
Floor	Rubber membrane roofing	1970s rehabilitation with later patching	Extremely poor Unsafe to walk on	No
Walls	The perimeter walls are exposed brick. The west wall is vertical wood siding	Original and 1970s rehabilitation	Extremely poor w/falling bricks	Yes
Windows	Multi-light, double hung sash in various states of decay	1970s rehabilitation	Poor w/lost glass and muntins	Yes
Ceiling	Remnants of the roof framing remain	Modern with original beam	Extremely poor w/recent collapse	No
Mechanical equipment	HVAC equipment	1970s rehabilitation?	Poor?	No



Photo 97: Collapsed roof framing and gable end wall



Photo 98: Water pools on the floor. It is no longer safe to walk on



Photo 99: The sash are in various states of decay including lost glass and muntins



Photo 100: Cornices on both the north and east have fallen

Third Floor, 4CS of Passaic County: One tenant occupies the entire third floor. They recently rehabbed the space so with the exception of the original exposed brick perimeter walls and columns and the 1970s windows, all of the finishes are new.				
Feature	**Description**	**Period**	**Cond.**	**Char. Defining Feat.**
Floor	Vinyl tile or carpet	Modern	Good	No
Walls	The perimeter walls are exposed brick. Original columns remain Modern walls have been inserted	Original and modern	Good although there were two active leaks during the weeks of surveying: one from driving rain into an office on the west and into the kitchen on the east	Yes
Windows	Multi-light, double hung sash with interior screens and storms	1970s rehabilitation	Good The interior storms are in good condition. Window deterioration is more evident on the exterior	Yes
Window trim	Plain wood trim and sills supported by plain wood aprons	Original?	Good	Yes
Ceiling	Modern drop ceiling with exposed large beams	Modern with original beam	Good	Original beams, Yes



Photo 101: 4CS occupies the entire 3rd floor



Photo 102: The perimeter walls remain exposed brick



Photo 103: But the finishes are mostly new



Photo 104: There were two active leaks during the two weeks of surveying in July



Photo 105: Rain poured down this western wall



Photo 106: The second leak came from the southeast corner of the kitchen

Fourth Floor, Former architectural office, now vacant: The northern 2/3 of the 4th floor is occupied by one office space which formerly served an architectural firm but is now vacant. The architect left in a hurry leaving everything including furniture, computers and all their files. The architect was a long-term tenant so the finishes appear dated. The offices along the west wall are used for collections storage by the Paterson Museum. This arrangement was in place during the architect's tenure in the space.

Feature	Description	Period	Cond.	Char. Defining Feat.
Elevator lobby	Carpet, modern walls, exposed framing at ceiling	Original ceiling but rest 1970s rehabilitation	Poor tired finishes but also very dark	No
Floor	Exposed diagonal, narrow gauge wood	Original	Good	Yes
Walls	Original framing visible with drywall walls and low partition walls Some of the original brick remains exposed like at the north wall	Original and 1970s rehabilitation	Good	Framing and brick: yes
Windows	8-light fixed or awning clerestory windows	1970s rehabilitation	Fair some are missing, some have missing elements	Yes
Window trim	Plain wood trim and sills supported by plain wood aprons	Original?	Good	Yes
Ceiling	Original framing visible with drywall ceilings	Original with 1970s infill	Good to fair w/some water staining	Framing: yes
Cargo doors and emergency egress	Cargo doors and emergency egress door to original stair tower on north wall	1970s rehabilitation	Good	No



Photo 107: The northern office space used to be occupied by an architectural firm. The offices on west (left in photo) are used for storage by the Paterson Museum



Photo 108: Museum storage



Photo 109: Looking south



Photo 110: A space on the eastern wall

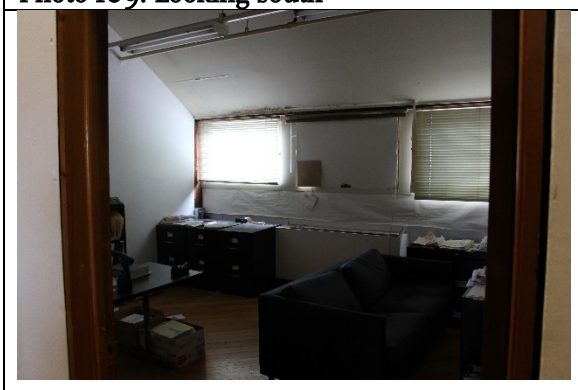


Photo 111: Some water damage is visible from the ceiling and below the windows



Photo 112: Another office space

Original Stair, North end: The stair at the north end of the building remains. It runs from the basement to the 4th floor and retains its original finishes				
Feature	**Description**	**Period**	**Cond.**	**Char. Defining Feat.**
Floor	Wood	Modern	Good	Yes
Walls	Brick	Original	Good	Yes
Windows in beaded board	10-light and 4-light clerestory windows	1970s rehabilitation	Good	Yes
Ceiling	Original framing	Original	Good	Yes
Stair	Wood stairs with solid beaded board balustrade	Original	Good	Yes

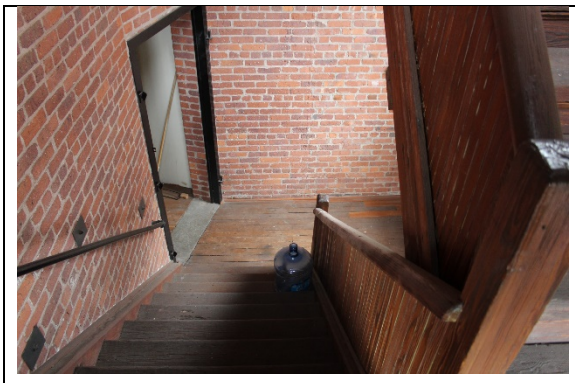


Photo 113: An original stair tower runs on the northern end of the building

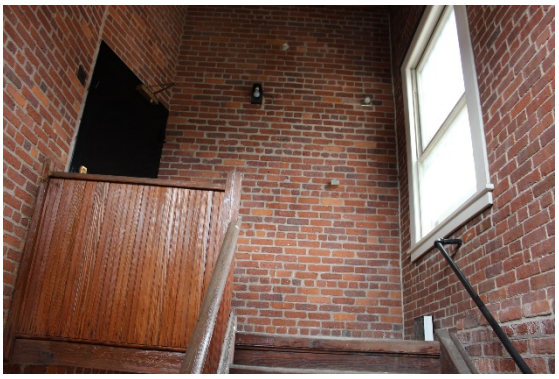


Photo 114: It retains all of its original features



Photo 115: It runs from the 4th floor to the basement



Photo 116: The clerestory windows of the stair tower



Photo 117: The stair is original



Photo 118: An original window opening, filled in when the north section was added

Fourth Floor, Engineering Office: The southern 1/3 of the 4th floor is occupied by an engineering firm; this is another long term tenant.				
Feature	**Description**	**Period**	**Cond.**	**Char. Defining Feat.**
Floor	Carpet	Modern	Fair. Looks tired	No
Walls	Original framing visible with drywall walls and partition walls The south wall remains exposed brick	Original and 1970s rehabilitation	Good	Framing and brick: yes
Windows	8-light fixed or awning clerestory windows	1970s rehabilitation	Fair some are missing, some have missing elements	Yes
Window trim	Plain wood trim and sills supported by plain wood aprons	Original?	Good	Yes
Ceiling	Original framing visible with drywall ceilings	Original with 1970s infill	Good with the exception of a hole on the west elevation	Framing: yes
Cargo doors and emergency egress	Cargo doors and emergency egress door to fire escape, south wall. The freight elevator opening is now a bookshelf	1970s rehabilitation	Good	No



Photo 119: The engineering firm at the southern end of the 4th floor

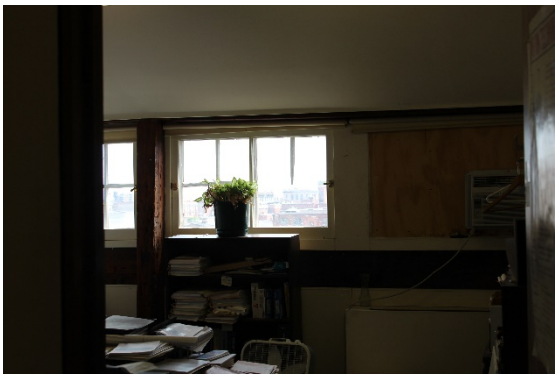


Photo 120: Windows have been removed for A/C units. Others are missing features



Photo 121: While most of the ceilings appear to be in fairly good condition, there is one large hole on the west elevation



Photo 122: Cargo doors and emergency egress



Photo 123: The freight elevator opening has been converted to a bookcase



Photo 124: Some of the hoist mechanism remain

Original Center Stair Tower: The original stair tower was converted to bathrooms during the 1970s rehabilitation project. Each of the upper floors—2-4—have a men's and women's room. The 3rd floor bathrooms have newer finishes.

Feature	Description	Period	Cond.	Char. Defining Feat.
Floor	Tile	1970s rehabilitation	Fair	No
Walls	Tile	1970s rehabilitation	Fair	No
Windows	Multi-light double hung sash	1970s rehabilitation	Fair	No
Ceiling	Acoustic tile	1970s rehabilitation	Fair	No
Fixtures	Sinks and toilets	1970s rehabilitation	Poor, not accessible	No

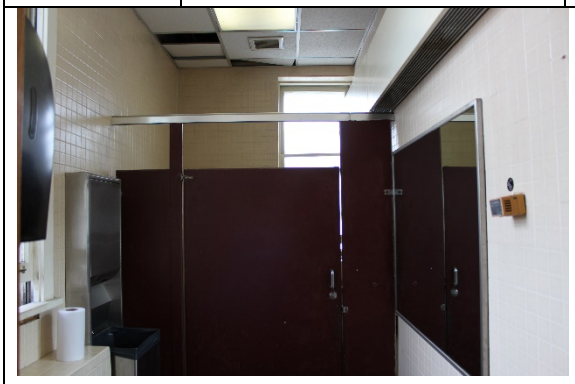


Photo 125: Typical women's room



Photo 126: It retains all of its original features

Basements: There are two areas of basements—both under additions. The north addition basement sits just below grade level and includes the first floor windows. It is used as a modern mechanical room. The basement under the south addition is accessible by a hatch in the floor of the Hannah Gallery and used by the museum for storage. However, following severe flooding from Hurricane Irene it has mostly been closed off due to mold.

Feature	Description	Period	Cond.	Char. Defining Feat.
Floor	Concrete?	1970s rehabilitation	Fair In north, puddles of water	No
Walls	Stone Foundation	Original	Fair with mold	No
Windows	In north addition multi-light double hung sash with broken glass	1970s rehabilitation	Fair	Yes
Ceiling	Floor framing	Original	Fair with mold, south Poor with severe deterioration, north	No



Photo 127: The south basement



Photo 128: The north basement



Photo 129: The multi-light sash of the north basement



Photo 130: The ceiling of the north basement is extremely deteriorated

V. STRUCTURAL CONDITION SURVEY

INTRODUCTION

The purpose of this survey was to identify structural defects and obtain sufficient information to assess the overall structural condition of the building. Photographs were taken and are included at the end of this section.

The existing building is large, mostly four story, with a two story addition at the North end, and with a masonry brick bearing wall structure. The floors and roof are wood frame construction. The floor structure consists of interior rows of heavy timber wood girders supported on cast iron columns with flared capitals. The wood floor joists span between these rows of wood girders and also bear into the exterior masonry walls. The flooring is a heavy timber tongue and groove wood decking. This type of framing was somewhat typical for manufacturing and storage facilities of this era and usually had large carrying capacities to support heavy loading conditions and machinery.

STRUCTURAL DEFECTS & DETERMINATIONS

1. North Addition:
   It has been previously documented that the wood roof structure over the mechanical units installed on the second floor of the North Addition portion of the facility were left exposed to the weather and have subsequently failed. The exposed top of the exterior masonry walls left exposed by the collapse of the wood structure and partial roof are experiencing major damage, including falling bricks and damaged mortar joints. The tops of these brick walls need major work to stabilize them and prevent continued falling of bricks to the sidewalk below.

   On the upper floor of the North Addition, there are several chillers that were exposed to the air (they were located below the exposed wood roof structure). This area had standing water during our visit, and this area is experiencing several roof leaks and delaminated structural wood members. The ceiling finishes below this area have collapsed from the water infiltration and damage. The floor decking for the supported floor under these roof leaks is also experiencing major delamination and appears to be unsafe to walk on. Both the original roof structure and the wood floor structure needs to be replaced. The roof structure should not be left partially exposed in the future. Ideally, the original roof configuration should be replaced so that the upper floor of the North Addition is fully protected.

   The boiler room is in the first floor of the area mentioned above, and the water has reached the ceiling of this area and has caused the ceiling finishes to collapse. The wood structural members are also experiencing some deterioration from the water infiltration.

   It appears that there is extensive structural damage in the North Addition that was caused by water infiltration and neglect. See photos 1 through 6.

2. Main Building:
   The majority of the existing main building appears to be in good

condition. The floors appear to be quite structurally substantial and would be able to support most anticipated usage types for this building. The masonry exterior walls are also in good condition and should only need a few localized areas of repointing effort.

The existing roof structure for the Main Building also appears to be in good condition. There were some signs of inactive insect damage to a few of the timber columns at the 4th floor (photo 8); these are not a cause of concern from a structural point of view. In addition, there were approximately six timber knee braces that have been critically notched (photo 9), also at the 4th floor. This damage is relatively minor and will need some remedial work, either sistering of the notched wood members or the addition of steel plates.

CONCLUSION

It is our opinion that the existing four story, main portion of the building is in good condition and will continue to adequately support all anticipated loads. Also, the building is quite substantial and will support most anticipated usages for this facility. The four story portion is a good candidate for on-going renovation and/or restoration efforts.

The North Addition, with the damaged and failed roof, is in poor condition. The exterior brick masonry walls are mostly in fair condition. However, major rebuilding work is required at the top of the walls. The exterior brick walls may be saved, but new floor and roof framing will need to be installed and the top portion of the walls rebuilt and repointed. Also, if this portion is left in its current condition, this portion of the building will continue to deteriorate, which will most likely lead to more failure and a dangerous condition.

If you should have any questions, please do not hesitate to contact our office.

PHOTOGRAPHS



Photo 1 – Collapsed Roof Trusses at the North Addition



Photo 2 – Deteriorating Exposed Top of Wall of the North Addition.



Photo 3 – Standing Water on Roof



Photo 6 – Water Damaged Ceiling and Roof Structure



Photo 4 – Water Damaged Roof Structure



Photo 5 – Deteriorating Plywood Floor Deck



Photo 7 – Loose and Leaking Roof; View from Clerestory Windows at the Fourth Floor
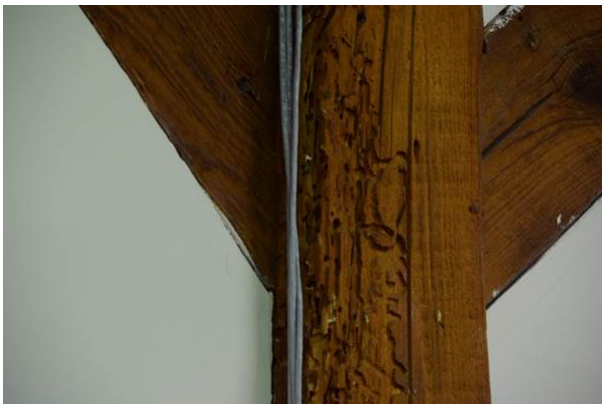


Photo 8 – Insect Damaged Column, 4th Floor



Photo 9 – Notched Knee Brace, 4th Floor

VI. MECHANICAL/ELECTRICAL SYSTEMS

HVAC:

General

The building is generally heated and cooled by ducted air handling units (AHU), perimeter four- pipe fan coil units (FCU) and finned tube radiators (FTR). Each AHU is fitted with a hot water coil, chilled water coil or direct expansion cooling coil.

Hot water is generated by gas fired boilers (Photo H-1). Hot water is circulated between the boilers and heating equipment by floor mounted end suction pumps. The boilers and hot water pumps are located in the basement mechanical equipment room (MER) at the north perimeter of the building (along Market Street). Each floor has a dedicated hot water boiler and pump. There is no redundancy for the boiler and pump. All boilers and pumps are approximately 40 years old and appear in a state of disrepair. The boilers have signs of heavy corrosion (Photos H-2 & -3). The pumps are corroded and have signs of leakage. The hot water piping and insulation appear to be outdated and signs of leakage are visible in the MER (Photos H-4,-5 & -6).

Chilled water is generated by four (4) split type chillers. Each floor has a dedicated chiller and a chilled water pump. There is no redundancy for the chilled water plant for each floor.

The evaporator and chilled water pump for the first floor are located in the basement below the Gallery (south end of the building). The nominal 40-ton, air cooled condensing unit is located on grade at the south end of the building (Photo H-7). The evaporator, chilled water pump, refrigerant lines, chilled water piping and insulation are all outdated, heavily corroded and no longer in service (Photos H-8,-9 & -10).

The evaporators and chilled water pumps for the second, third and fourth floors are located in the main MER. The pumps are mounted on the floor and the evaporators are mounted overhead on steel platforms. All pumps, evaporators, expansion tanks, chilled water piping and insulation appear to be outdated. The associated condensing units are located on the roof of the second floor at the northeast corner of the building (Photo H-11). The three (3) condensing units (CU) are 10 years old and appear to be in good physical condition. Each CU has a nominal capacity of 40 tons. The CU's are not provided with spring vibration isolators. We were informed by building personnel that two of the three CU's are out of service due to electrical issues. Only the chilled water plant (CU, evaporator, pump) for the third floor was in operation at the time of field observation.

The AHU's, FCU's, FTR's and associated piping, ductwork and air devices were installed in 1979, making them 37 years old.

All Heating, Ventilation and Air Conditioning (HVAC) equipment in the building is controlled by an outdated pneumatic system. We were advised by building personnel that the controls are no longer functioning. The compressor cannot hold adequate air pressure because of numerous leaks in the old pneumatic tubing.

Chilled water control valves, hot water control valves and motorized air dampers have lost their capability to automatically modulate or open/close. This function is essential in order for the HVAC system to provide a comfortable working environment and code required ventilation air.

FIRST FLOOR:

Gallery:

The Gallery and Ancillary Offices are served by a dedicated AHU with hot water coil and direct expansion (DX) coil. The AHU is mounted above the interior office but exposed to the Gallery (Photo H-12). The associated air cooled condensing unit (CU) is grade mounted adjacent to the 40 ton chiller on the south side of the building (Photo H-13). The capacity of the CU is 10 tons and it is approximately 20 years old. Per building personnel, the CU is no longer working. The AHU has exposed supply ductwork for the Gallery and round flexible runouts for the offices. The return air is not ducted and the AHU does not have an outside air intake (Photo H-14).

The perimeter walls are provided with hot water finned tube radiators (FTR) (Photo H-15). The perimeter FTR have no zone controls. The interior office is cooled by a floor mounted, packaged DX fan coil unit (Photo H-16). The air cooled condensing unit is located in the Gallery (Photo H-17).

Museum Display Area:

The Museum Display Area is served by a ceiling mounted AHU (Photos H-18 & -19). The AHU has a chilled water coil with a total cooling capacity of 394,193 btu/hr (or 394.2 MBH), and a sensible cooling capacity of 338.6 MBH. The hot water heating coil has a capacity of 388.3 MBH. The supply fan has a capacity of 14,000 cubic feet per minute (cfm) with a minimum outside air of 1,300 and external static pressure of 0.66 inches water gauge (iwg). Return air is circulated back to the AHU by a remote return air fan. It appears that the original design intent was to provide free cooling (economizer) during periods of favorable ambient conditions by venting the return air to the atmosphere and drawing in a matching amount of outside air.

The supply air is distributed throughout the display area with exposed rectangular ductwork with round diffusers (Photo H-20). One of the round diffusers is damaged and has missing cones (Photo H-21). The Display Area has no drop ceiling. Two 48" x 48" ducted ceiling registers return air to the unit (Photo H-22). The outdoor air intake louver and relief air louvers are located at the basement level with an areaway by the main entrance at the east side of the building.

Administrative Offices:

The Administrative Offices are served by a ceiling mounted AHU. The AHU has a chilled water coil with a total cooling capacity of 107.2 MBH and a sensible cooling capacity of 91.3 MBH. The hot water heating coil has a capacity of 76.3 MBH. The supply fan has a capacity of 3,700 cfm with a minimum outside air of 540 cfm and external pressure drop of 0.42 inches water gauge (iwg). The outside air, return air and relief air are handled by a remote return air fan. It appears that the original design intent was to provide free cooling (economizer) during periods of favorable ambient conditions.

We were informed by building personnel that this AHU is no longer in service. The AHU is inaccessible. The perimeter offices are provided with window type air conditioning (AC) units and finned tube radiators.

SECOND FLOOR:

The main interior space is served by an AHU with ducted supply, return and outside air (Photo H-23). The AHU is mounted on the floor of the mechanical equipment room

(MER) on the second floor. It was observed that the floor of the MER is not stable. The AHU has a chilled water coil with a total cooling capacity of 66 MBH (1,000btu/hr). The hot water heating coil has a capacity of 105 MBH. The supply fan has a capacity of 2,700 cfm with minimum outside air of 1,350 cfm. The perimeter areas are served by four pipe FCU's. The associated chiller was not in operation at the time of our field survey.

The Addition at the southeast corner of the building is served by a 10-ton packaged Rooftop Unit (RTU). The 10-ton RTU appears to be outdated and is no longer working (Photo H-24).

THIRD FLOOR:

The main interior space is served by an AHU with ducted supply, return and outside air (Photo H-25). The AHU is mounted on the floor of the mechanical equipment room on the second floor. The AHU has a chilled water coil with a total cooling capacity of 66 MBH. The hot water heating coil has a capacity of 105 MBH. The supply fan has a capacity of 2,700 cfm with minimum outside air of 1,350 cfm. It was observed that the fan for the third floor has a loud, squeaky belt noise. The perimeter areas are served by four pipe FCU's. The associated chiller and pump were running at the time of our field survey.

FOURTH FLOOR:

The main interior space is served by an AHU with ducted supply, return and outside air. The AHU is mounted on overhead platform at the north end of the building. The unit is exposed to view and there is no easy access to the AHU. The AHU has a chilled water coil and a hot water coil. The capacity of the coils and supply fan is the same as the AHU for the third floor. The AHU was not running at the time of field observation. The perimeter areas are served by four-pipe FCU's.

RECOMMENDATIONS:

Since the HVAC system of the building is outdated and is no longer functioning properly due to the inability of the pneumatic control system to open or close chilled water control valves, hot water control valves, return air dampers and outside air intake dampers, we recommend that the entire HVAC system be gutted and replaced with a new, high efficiency HVAC system with direct digital controls. We suggest that the building Owner consider one of the three HVAC systems listed below:

FOOTNOTE:

1. Among other things, the September, 2002 Page Ayers Cowley Architects conditions report found that: 'Most of the mechanical equipment is old, at the end of their useful life and in need of replacement." (see PACA report page 52; T&M page 3, HVAC Facility Assessment, page 3.)

DESCRIPTION OF ALTERNATIVE HVAC SYSTEMS

	OPTION I	OPTION II	OPTION III
System Type:	Variable Refrigerant Flow (VRF)	Variable Air Volume (VAV)	Four Pipe Fan Coil Units (FCU)
System Description:	The system operates under the principle of an air-to-air heat pump. However, the indoor evaporators are manifolded back to common outdoor condensing units. This allows for recovery of energy when loads in building are varying, with simultaneous use of heat in some zones, and cooling in others.	The system operates under the principle that cooling is required on year-round basis at interior areas, and zones with high density occupancy. The amount of air that is delivered to each space is regulated thermostatically, and will then be warmed with use of new energy if the minimum air flow rate starts to overcool the space. A perimeter heating system will also be provided to offset loss at the envelope.	The system operates similar to the VAV system. However, with FCU's, the airflow to each zone will be constant while the water flow to the cooling coil will be variable. Dehumidification will be achieved by operating the boilers in the summer.
System Configuration:	The building will be serviced by four (4) VRF Systems, with one VRF system per floor. Ventilation air for each VRF system shall be provided by a constant volume dedicated outside air system (DOAS), with fully ducted supply and exhaust. The DOAS shall deliver neutral air to each zone, making use of heat recovery and hot gas reheat. The indoor VRF units shall be	The building will be serviced by four (4) VAV Systems, with one VAV system per floor. The VAV systems shall be comprised of a packaged rooftop air conditioning unit, fully ducted supply and return air streams, and a VAV terminal with reheat at each zone. The VAV's shall be mounted in ceiling of Corridors. The rooftop units shall include a full air side economizer, and heat	The building will be serviced by four chilled water plants, four hot water heating plants and multiple floor mounted perimeter FCU's and ducted ceiling mounted FCU's for the interior spaces. Ventilation air for each space shall be provided by a constant volume dedicated outside air system (DOAS) with fully ducted supply and exhaust.

	mounted in walls and/or ceilings, and fully ducted for acoustically sensitive areas. Consideration will be given to exposed, ceiling mounted cassettes for the zones without special acoustic requirements.	recovery device to maximize efficiency. A gas fired, condensing type boiler with circulating pump and hydronic piping shall service the needs of each reheat coil, as well as the perimeter heat.	
Pros:	Relatively high level of efficiency (50,000 to 60,000 BTU per square foot per year for HVAC budget). Good acoustics (as determined by M-E-P consultant). The entire installation works on principle of heat recovery cycle.	High level of efficiency (90,000 to 100,000 BTU per square foot per year for HVAC budget). Average acoustics (as determined by M-E-P consultant). A full air side economizer minimizes compressor run time during spring and fall.	Similar to existing HVAC system of the building.
Cons:	Maintenance must be performed by VRF trained personnel.	Acoustically sensitive spaces may be challenging to design. Use of RTU's and vertical air distribution ducts may present structural challenges.	Relatively lower level of efficiency compared to VAV and VRF systems. Relatively weak acoustics compared to VAV and VRF systems. Periodic maintenance of hot water heating plant, chilled water plant and FCU's is required.
Estimated Construction Cost:	$50.00 per square foot	$45.00 per square foot	$50.00 per square foot

PLUMBING

The rehabilitation of the building was designed for one two-inch diameter water service. It is served by a single meter which is located in the northeast corner of the basement boiler room. Recently, three other meters with capped outlets were installed by the Passaic Valley Water Commission but are not connected to the building's plumbing system.

Domestic hot water is generated by water-to-water heat exchangers. Each floor has its own domestic hot water heat exchanger. The heating hot water is generated by the corresponding boiler. The domestic hot water heat exchangers and associated pumps are mounted overhead on a steel platform. All heat exchangers and pumps appear to be outdated and in need of replacement.

The location of the main sanitary service for the building was not identified. All of the public toilets are located along the east side (parking lot side) of the building. A manhole was observed near the paved walkway and north of the Main Entrance at the east side of the building.

The building is supplied by a 3 inch diameter natural gas service. Each floor has a separate gas meter (Photo P-2).

Recommendations:

We recommend that new gas-fired high efficiency domestic hot water heaters be provided to replace the outdated heat exchangers. Each floor should be provided with one (1) domestic hot water heater. Existing domestic water piping should also be replaced with new. If additional fixtures/toilets will be added in the future, upgrading the city water service will need to be considered. A new sump pumping system should be provided in the basement boiler room.

FIRE PROTECTIONS

The building is protected with a dry type sprinkler system (Photo P-3). The 6 inch diameter main city water service for fire protection is located at the northeast corner of the boiler room.

ELECTRICAL

The main Electrical Service is 208/120 volts, three phase, four wire, 3000 amps, provided by PSE&G (see Photo E-1). It is arranged with five (5) main service disconnects, each with its own C/T compartment and direct utility company meter. There is a separate meter for each of the four floors, plus a "house" meter (see Photo E-2). The first and third floors are 800 amps each, the second and fourth floors are 600 amps each, and the house service is 400 amps. Inspector's labels on the gear indicates it was installed in 1979, which would coincide with the original renovation of the building. It appears to be in very good condition, however there are signs of water infiltration in that area of the basement boiler/mechanical room which needs to be remedied immediately to prevent damage to the electrical equipment.

We have requested copies of the electric bills for the previous twelve (12) month period, but to date they have not been received. However, since much of the HVAC equipment is inoperable, these would not provide accurate information. As such, we cannot comment accurately on the existing peak demands, or the relative adequacy of the existing services, but 3000 amps would appear adequate for the size and use of the building, as it will allow approximately 20 watts per square foot overall.

The house service panels are located in front of the main switchgear, and there is a distribution panel and two (2) branch circuit panels on each floor, stacked at the north end of the building (see Photo E-3). There is also an additional branch circuit panel in the Building Manager's office. The panels all appear to be in good, serviceable condition, however there are many "open spaces" scattered throughout the panels (see Photo E-4). These are a code violation, and a safety hazard, as the panels are not locked, and the openings provide direct physical access to the live interior bus. Blank covers must be provided to safely close all of these openings, including the location on the second floor where cardboard has been taped over the opening (see Photo E-5).

There is a group of four (4) large branch circuit panels, serving mechanical equipment loads, located in the North Addition Second floor mechanical room (see Photo E-6). These panels show obvious signs of prolonged water infiltration, i.e. staining and rust, no doubt from the same leakage that has compromised the flooring in this room (see Photo E-7). The Building Manager reports that multiple air conditioning units are not functional, and that the building experiences occasional "single phasing" (loss of one out of three service feeders) which has burned out motors in the past. A phase failure monitor/relay has been added to the single currently operating condensing unit. Since these units are supplied by the electrical panels with visible water damage, the breakers in these panels should be checked/tested by an electrician to confirm they all remain in working order, once all leakage issues in this area are resolved.

Following the failure of the building's central air conditioning systems, many window units have been installed in an attempt to maintain acceptable comfort levels. Since the branch circuiting of convenience receptacles was not intended to support these multiple, large appliances, the Manager reports that tripping of branch circuit breakers has become commonplace, and that occupants have learned to use the air conditioners and other appliances selectively, in order to avoid tripping. If the existing HVAC systems are made functional or replaced, it should alleviate the problems with nuisance tripping.

There are many locations where junction boxes are missing covers (see Photos E-8,-9, & -10), or line voltage wiring is otherwise exposed (see Photo E-11). These are code violations and must have blank box covers installed or wiring re-installed correctly concealed in conduit and junction boxes.

It is our understanding, based on discussion with the building's manager, that while presently functional, the controller for the passenger elevator is of questionable reliability. Further, the controller is reportedly obsolete and would not be repairable in the event of failure. Given these circumstances and the fact that there is only one passenger elevator, it would be advisable to consider upgrading the elevator or at least replacing the controller in the near future. It may be a possibility to also convert the freight elevator for passenger use.

Lighting in tenant areas is predominately surface/pendant fluorescents with wraparound prismatic lenses (see Photos E-12 & -13), while common areas such as elevator lobbies and corridors consists mostly of can style downlights with PAR type incandescent or compact fluorescent lamps. The museum lighting is provided by exposed fluorescent strips, both T12 and T8 type (see Photo E-14). Due to the long term effects of ultraviolet

emissions, UV protection should be considered for any museum materials where color fading or materials degradation is of concern. It was not readily apparent if the lamps are presently installed with filter sleeves, but there are no lenses. Emergency lighting is furnished by battery backup and exit signs with remote heads (see Photo E-15).

Manual pull stations are present for activation of the fire alarm system (see Photo E-16), but there were no automatic smoke/heat area detectors observed. They are not a code requirement for a sprinklered building, however, due to the nature of the structure, its location (the Manager mentioned recent incidents of vandalism) and the irreplaceable historic contents of the museum area, we would strongly recommend installation of a full coverage automatic smoke detection system. The early warning afforded by smoke detectors can make a tremendous difference is the response time of a fire department, as opposed to waiting for a fire to become sufficiently involved to activate the alarms by way of the sprinkler water flow switches. This is particularly relevant during off-hours, when the building occupants are not present to intervene or manually activate the alarms.

Recommendations:

Our recommendation for, and relating to, the electrical systems would include:

- Eliminate water infiltration from boiler room and second floor mechanical room
- Provide blank cover plates for all unused openings in all electrical panels
- Provide covers for all open junction boxes
- Concurrent with HVAC improvements, remove window air conditioners
- Check functionality of third floor MER panel breakers for condensing units
- Evaluate the need for UV protection in the museum, if filter sleeves not present
- Install full coverage automatic smoke detector addressable fire alarm system

PHOTOS:



Photo H-1



Photo H-2



Photo H – 3


Photo H-4


Photo H-7


Photo H-5


Photo H-8


Photo H-6


Photo H-9



Photo H-10



Photo H-13



Photo H-11



Photo H-14



Photo H-12



Photo H-15



Photo H-18



Photo H-16



Photo H-19



Photo H-17



Photo H-20


Photo H-23


Photo H-22


Photo H-24



Photo H-25



Photo P-2



Photo P-1



Photo P-3



Photo E-1



Photo E-4



Photo E-2



Photo E-5



Photo E-3



Photo E-6



Photo E-7



Photo E - 8



Photo E-9



Photo E-10



Photo E -11



Photo E-14

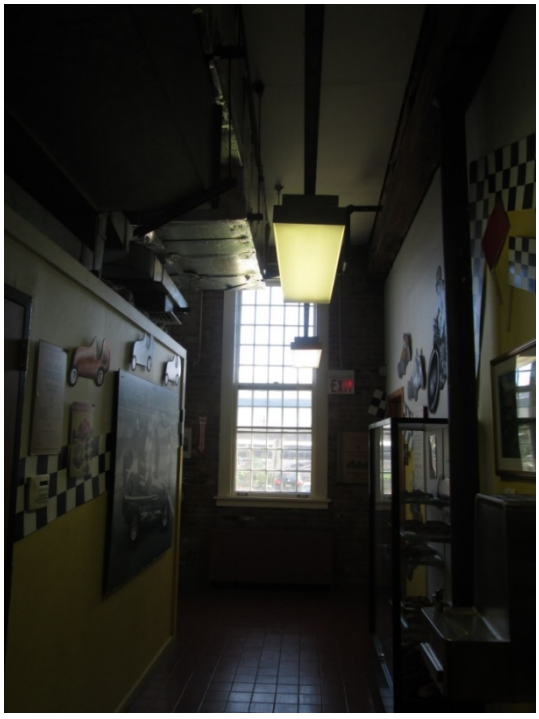


Photo E-12



Photo E-15



Photo E-16

VII. CODE & ACCESSIBILITY REVIEW

Introduction:

Clarke Caton Hintz completed a code analysis for the Rogers Locomotive Works Erecting Shop as part of the preparation of this Preservation Plan. The purpose of this analysis is to understand existing and potential building safety issues as well as code inspection and accessibility issues so that the City of Paterson can plan for potential capital costs. The following codes were reviewed: International Building Code 2015, NJ edition; New Jersey's Rehabilitation Subcode; International Fire Code; and ICC/ ANSI A117.1. The following building classifications currently apply:

Existing Use Groups:
B, Offices (floors 2, 3 and 4)
A3, Museum (first floor)

Potential Use Groups, Short Term:
B, Offices;
A3, Museum

Building Footprint (1st floor):	17,830 SF
Total Occupiable Area (floors 1-4):	51,615 SF
Building Height:	4 stories

The building is fully sprinklered.

Since the building has a mix of uses, there are two ways to analyze the overall building: In the first method, the use groups must be separated by a fire separation assembly. Since the building is fully sprinklered, this separation rating is reduced from two hours to one hour. Since the building does not appear to have this fire separation assembly in place, the second alternative must be used.

Alternatively, the requirements of section 508.3 of the International Building Code, NJ Edition, "Non-separated occupancies" can be used. In this scenario, the more stringent use group governs the overall interpretation of the building. Where B and A-3 are the two use groups, A-3, or the museum use, is more stringent and will govern the height and area requirements for the building.

Construction Type: In the past, it appears that the building has been described as 3A construction. This construction type has non-combustible exterior walls with combustible structure on the interior. The one problem with this designation is that the floor/ ceiling separation assemblies are supposed to have one hour ratings. It does not appear that the building meets this requirement.

The building certainly fits the description of 3B construction, with non-combustible exterior walls (masonry) and wood interior structure. For this construction type, the floors are not required to be rated. Unfortunately, even when sprinklered, buildings of the A3 use group are currently only permitted to be 3 stories.

An alternative interpretation of the building might be Heavy Timber, or construction type 4. However, the floor framing does not meet the stringent requirements of this construction type (6" nominal width and 10" nominal depth).

If the City chooses to reconfigure the uses in the building to any large degree, it will be necessary to meet with Building Official for the City of Paterson so that the construction classification of the building can be fully understood. For instance, locating large lecture rooms or exhibit space on the second floor would require its reclassification from B (office) to an A3 use (museum). This type of

change might necessitate reclassifying the building's construction classification and could lead to extensive new requirements for fire ratings, etc.

Since the building is deemed to be historic and since work must meet the requirements of the Secretary of the Interior's Standards for the Treatment of Historic Properties, New Jersey's Rehabilitation subcode applies, and its requirements may permit certain existing conditions to remain in place even if they don't meet the letter of the code for new building construction.

A major cause for concern is the water leaking that is occurring at the electric panels, and the collapsing ceiling at the two-story North Addition. These conditions are safety hazards that should be addressed immediately.

Rehabilitation Subcode:

The Rehabilitation Subcode is the part of the NJ Uniform Construction Code that deals with existing and historic buildings. This code recognizes that it is not always feasible to require an existing or historic building that is being renovated to meet all of the code requirements of new construction. This subcode allows for flexibility in various code requirements, including egress and fire protection, while setting reasonable base standards for life safety, as long as the building's use is not changed or not changed to a more hazardous use category. There are base requirements for buildings of all use groups, as well as higher base standards for larger projects and for buildings that have a more hazardous occupancy.

There are six categories of work described by the Rehabilitation Subcode: Repair, renovation, alteration, reconstruction, change of use and addition. Work of more than one category may be part of a single, larger project.

Future work at the Rogers Works may fall into the full range of work:

Repair is defined as "...the restoration to a good or sound condition of materials, systems and/or components that are worn, deteriorated or broken using material identical or similar to the existing."

Renovation is defined as "...the removal and replacement or covering of existing interior or exterior finish, trim, doors, window or other materials with new materials that serve the same purpose and do not change the configuration of space." It also includes the replacement of equipment or fixtures. These categories only require that any work being completed not cause any lessening of the existing structure's or system's capacity or accessibility, and that certain non-compliant products or practices not be used. In addition, door hardware being replaced should be upgraded so that it is handicapped accessible. In the Repair category, new toilets should be "low-flow." If restrooms are being renovated, they must be barrier free; when doors are replaced, they should also meet certain accessibility requirements.

Alteration is defined as "...the rearrangement of any space by the construction of walls or partitions or by a change in ceiling height, the addition or elimination of any door or window, the extension or rearrangement of any system, the installation of any system, the installation of any additional equipment or fixtures and any work which reduces the load bearing capacity of or which imposes additional loads on a primary structural component." This would include HVAC and electrical, as well as any interior reconfigurations that might be required. This type of work has more detailed

requirements, including Materials and Methods, and requires greater accessibility compliance.

Reconstruction is defined as "...any project where the extent and nature of the work is such that the work area cannot be occupied while the work is in progress and where a new certification of occupancy is required before the work area can be reoccupied." This applies to major renovation projects, and would likely include work from the other categories. Most work described in this Preservation Plan would not fall into this category.

Additions include "...any increase in the footprint are of a building or an increase in the average height of the highest roof surface or the number of stories." Additions and new building elements are required to comply with the provisions of the other technical subcodes of the UCC (i.e. as if it were a new building). This Preservation Plan proposes a small addition to house handicapped accessible restrooms and to provide some additional storage.

There is no limitation to the amount of "repair" work that is permitted to be undertaken. However, all alteration work must be reviewed to insure that it does not cause a non-conforming situation with the regard to the base requirements of the particular Use Group. Major renovations that qualify as "reconstruction" under the Rehabilitation Subcode have more stringent code requirements (but not as stringent as for new construction). In any case, the building must meet the basic requirements of the Uniform Fire Code.

Change of Use:

The other aspect of the Rehabilitation Subcode that comes into play is when an existing building or portion of a building changes use.

In broad terms, the Subcode continues to treat existing buildings in a special way as long as the new uses have the same or lower "hazard classifications" in a number of areas. These areas include "Relative Group Hazard", "Means of Egress", "Height and Area", "Exposure of Exterior Walls", "Exterior Wall Requirements", "Automatic Sprinkler System", "Structural Load Categories", etc. In each of these categories, R3 Single Family Residence is the lowest hazard. Any change of use to a higher hazard classification means that most of the code requirements for new buildings comes into play.

The A3 use group (museum) is typically a higher hazard use group than B, business (office). If portions of the second floor are reclassified as A3 use, the building's construction classification, height, area, etc., would need to be reassessed and might lead to extensive and expensive renovations. However, it is possible to relocate the "business" aspects of the Museum's functions (offices and administrative areas) to the another floor without triggering a change of use.

Historic Buildings:

The Rehabilitation Subcode also addresses buildings that are listed on the State and National Registers of Historic Places. For instance, historic buildings undergoing repair, renovation, alteration, restoration or reconstruction consistent with the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties may comply with certain Special Provisions instead of

complying with the corresponding requirements of the main code. The following Special Provisions apply to the Rogers Works:

1. Materials and Methods: Exceptions are granted for materials that are exposed to view in recognition of the need to preserve the historic character of the building.
2. One-Hour Fire Resistive Assemblies: Where one-hour fire resistive construction is required, existing plaster and lath is permitted to remain and meet the requirement.
3. Means of Egress: Existing widths of existing door openings, corridors and stairways may be maintained if less than the required means of egress width, provided that the local code official finds the opening traversable.
4. Doors: Direction of swing and hardware requirements may be waived, provided that the level of accessibility and safety of egress is increased wherever possible.
5. Railings: Existing handrails may remain or may be replaced with new to match the originals, even when they do not meet code requirements for new construction. Guardrails of 42" are not required; rail height of at least 30" is acceptable and the existing baluster and rails may remain.
6. Exit Signs: Alternate locations or designs may be acceptable if the code requirements would result in damage to the building's historic character.

Plumbing Fixture Analysis:

The Rogers Locomotive Works Erecting Shop has existing restrooms on all four floors. The first floor has larger restrooms with three water closets and three lavatories for each gender. The upper floors have restrooms with two water closets and two lavatories in each restroom (see the next section for a discussion of their accessibility).

When analyzing current occupancy and plumbing fixture count requirements, it is apparent that the building has fewer fixtures than required by current code:

First Floor: Total floor area is approximately 17,820 sf. The net area (subtracting out non-occupiable areas) is approximately 15,000 sf. Occupancy in an A3 use group (museum) is calculated as one person per 30 net square feet. This calculates to approximately 500 people (at maximum capacity). Per New Jersey's plumbing subcode, this would lead to a requirement of three water closets and two lavatories for men and five water closets and two lavatories for women. The women's room is short two water closets.

Second Floor: The total area is approximately 14,202 sf. For business uses, occupancy is calculated as 100 gross square feet per person, or 142 people total. This leads to a requirement of three water closets and three lavatories per gender. The current restrooms have two fixtures each.

Third floor: The total area is approximately 10,611 sf. For business uses, occupancy is calculated as 100 gross square feet per person, or 106 people total. This leads to a requirement of three water closets and two lavatories per gender. The current restrooms have two fixtures each.

Fourth floor: The total area is approximately 8,972 sf. For business uses, occupancy is calculated as 100 gross square feet per person, or 90 people total. This leads to a requirement of three water closets and two lavatories per gender. The current restrooms have two fixtures each.

As is apparent from this analysis, the building has fewer fixtures than is currently required by code. As renovations are made in the building, these shortcomings, as well as the handicapped access issues for the upper floor restrooms (see the next section) should be addressed.

Handicapped Access:

The Rogers Locomotive Works Erecting Shop is, for the most part, handicapped accessible. Extensive effort was put into providing access to the main entry and to the upper floors. The entry door is at grade and leads directly to an accessible elevator that takes visitors to all floors. However, the accessibility code indicates that 50% of the egress doors should be accessible, and only one is at the Rogers Works.

Accessible restrooms are another issue. In general, the first floor public restrooms are accessible, although repairs are needed and the faucets at the sinks do not meet current accessibility requirements.

The restrooms on the upper floors are not accessible at all. These spaces are too small, do not provide the required access dimensions and turning radii, and do not have accessible stalls. As renovation work occurs in the building, these restrooms should be upgraded. It is possible that additional space will need to be found to provide accessible restrooms, particularly where additional fixtures are required (see above).

In addition, there are a number of doors throughout the building that have knobs or other door hardware that are not accessible. These are typically older doors that have not yet been upgraded. Again, as renovation work occurs in the building, these doors should be upgraded so that they are fully accessible.

The existing passenger elevator, while providing handicapped access to the upper floors, requires upgrading as its controller has reached the end of its useful life (see Chapter VI). This work should be done in the near future to prevent failure of the elevator.

Another cause for concern is the condition of the parking lot and walkways. There is currently no safe wheelchair access from Market Street as the failed walkway is closed, forcing people to walk in the parking lot which has a number of potholes. Walkways should be repaired and/or replaced and the parking lot repaved and striped to alleviate these conditions.

Summary:

As renovations are made to the Rogers Locomotive Works Erecting Shop, there are code and accessibility improvements that should be made: The HVAC system should be replaced and current ventilation requirements implemented; restrooms and door hardware should be improved; a second accessible means of egress should be added, etc.

A second set of requirements comes into play only if the use of the building or portions thereof changes. If this occurs, it may become necessary to provide new fire separation assemblies so that the building meets current height restrictions based on its construction type.

The code analysis of the Rogers Locomotive Works Erecting Shop begins with the assumption that the existing uses will remain in the building, at least in some form, for the foreseeable future. If the use of the building remains essentially the same, the code analysis of the building is relatively straightforward, with minimal changes required.

It is possible that the uses of the building remain the same, but the proportion of uses changes. For instance, the City may consider expanding the Museum by subleasing additional space on the second floor. In this case, additional analysis and potential changes to the building will need to take place to accommodate new egress patterns and occupancy. As indicated above, change of use may initiate new analysis of the building's construction type and allowable.

However, even if the Museum expands onto the second floor, it is possible not to change the use on the second floor by only locating the Museum's "business" functions there, e.g. offices and other administrative functions.

VIII. PRESERVATION PHILOSOPHY AND FUTURE USE OF THE BUILDING

PRESERVATION PHILOSOPHY

All future projects at the Rogers Company Erecting Shop should be planned, designed and executed in compliance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. The Rogers Erecting Shop will continue to serve as a well-used, multipurpose building with a combination of museum and office spaces. Because of this, *rehabilitation* should continue to be the guiding preservation philosophy.

Rehabilitation is defined in the Standards as, "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values. Rehabilitation acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character."[1] Rehabilitation provides flexibility, enabling new materials to be added and changes to be made while retaining the important historic character defining of each element.

OFFICE SPACE

Since opening the building, the Great Falls Preservation and Development Corporation has sublet space on the upper three floors of the building. This has attracted a variety of professional and social service agencies. The office sizes vary from a single office space to the entire floor. It seems that the tenant typically outfits the spaces to meet there needs with cubicles, individual offices and/or conference rooms or classrooms. Under the Lease and the 2000 court ruling, the Great Falls Corporation is responsible for using rents from its subleases to operate and provide "ordinary maintenance" for the building. Larger capital projects and costs are the responsibility of the City. Currently, the building is about 60% occupied with roughly 2/3 of the second floor occupied, the entire 3rd floor rented and about 1/3 of the 4th floor in use.

THE PATERSON MUSEUM

Since 1982, the Paterson Museum has occupied the first floor of the building. Founded in 1925 by the Paterson Free Public Library board of trustees to hold history exhibits at the Danforth Library, the museum moved to its own home in a carriage house on Summer Street, next to the library, in 1927. After almost 100 years of history, the museum has a vast collection including exhibit materials, larger machines and objects, paper archives, photographs, archaeological materials, a gem collection among other local history materials. The museum has a staff of nine and is open Tuesday-Sunday; roughly 7,000 school children visit a year with an average annual visitation of 24,000 people. The museum is overseen by a joint library and museum board of directors. Funding comes directly from a line item in the City's annual budget.

In discussions with the museum staff as well as through our building investigations, it is clear that the Paterson Museum needs more space. The existing storage space is filled to

[1] http://www.nps.gov/tps/standards/four-treatments/treatment-rehabilitation.htm

capacity with files and objects found on the floor, piled on top of file and cabinets and in the individual offices. In addition, overflow collections storage takes place on both the 2nd and 4th floors by an informal arrangement with GFP, when those spaces are not in use by other tenants. The use of space on the 4th floor was established is a long-term agreement with the first tenant of this office. The 2nd floor storage is more informal and may only be available because that space is currently vacant having once housed the Paterson Urban Enterprise Zone. In addition, to additional collections storage space, the museum could use additional behind-the-scenes collections work spaces for exhibition and label creations, conservation of materials and collections cataloguing. Redesigning space on the second floor to accommodate the Museum's offices as well as some work space may be a viable option.

The Paterson Museum has up to 7,000 school children visit their facility annually. Because of a lack of large meeting spaces, the museum tries to limit the group sizes to 50 which is about the maximum of one bus load of children. However, if more than one bus is scheduled, the museum works with the Great Falls Welcome Center to coordinate several activities for the larger groups. The museum uses the Hannah Gallery for larger groups, including school children but could use a designated classroom to expand their programming for more activities for children.

In addition to traditional museum activities, the Paterson Museum frequently hosts historians and other researchers who use the local history archives. Space is limited for this; a research library may be warranted.

Finally, the Hannah Gallery is one of the larger public spaces available to Paterson residents so is used for a variety of purposes. In addition to private art shows, it hosts the city-wide student art shows. It is used during the Great Falls Festival and is also used by groups such as a Dominican group that holds its elections here every year and an annual black history month celebration. A larger space, or even an auditorium, would be a well-used space, meeting a need that extends beyond the museum into the community.

PROS AND CONS FOR CONTINUING A MIXED USE BUILDING

Generally speaking for a large industrial building like the Rogers Erecting Shop, a mixed use building—one that accommodates both public and private uses—is an ideal arrangement. The private offices can easily be inserted into the open spaces without detracting from the industrial large-scale historic architectural fabric while providing a daily, Monday-through-Friday active use of the building. A public use, like a museum, brings the larger community into a historic resource and provides the perfect context in which to learn about Paterson's industrial heritage. Weekends are an active time for museums, ensuring an every-day-of-the-week activity within the building.

PROS AND CONS FOR CONTINUING PROVIDING OFFICES ON THE UPPER FLOORS

Pros

- The late 1970s work equipped the building with a central elevator and new stair. This was a massive capital cost that will not have to be spent again, even if the elevator needs upgrading
- This conversion has already been accomplished and has been done

sensitively so the building still reads as a historic building. While the finishes are tired in spaces, they can be spruced up without adversely affecting the historic character of the building.
- Renting out offices spaces provides rental income for the building.

Cons

- When used as private offices, those spaces are no longer available for the general public to see and enjoy, although the workers and visitors to the various businesses certainly have access to those spaces.

PROS AND CONS FOR CONTINUING TO USE THE BUILDING AS THE PATERSON MUSEUM

Pros

- The museum has been housed here for almost 35 years. It is a well-established part of the community.
- It is centrally located within the Great Falls Historic District.
- It allows the public access to an important remnant of Paterson's industrial history.
- Large open spaces of the building provide flexibility for exhibits.
- There are significant partnership opportunities with other local history and museum groups including the New Jersey Naval Museum and the submarine the USS Ling.

Cons

- Although close to the National Park Service site at the Falls, the Museum feels somewhat isolated from that location.
- Parking for the Museum is extremely limited as the current office tenants of the building have a significant number of drop in visitors who take up the spots.
- Access to the museum in not well-marked; it is counter-intuitively placed at the rear.
- Providing museum-quality systems including heating, cooling and humidity control is difficult in an industrial brick building with no vapor barrier or insulation in the exterior walls. These systems will need to be replaced and upgraded to accommodate the collections and artifacts.
- 19th century industrial buildings were flooded with natural light to enable workers to see well to produce quality goods. 21st century museums prefer little natural light to protect the collections. The oversized windows and doors of the Rogers building are an impediment to sound collections care.
- The Paterson Museum needs more space. The existing layout of the museum no longer meets its needs. One option is to expand into space on the second floor.

Note: The current lease agreement between the City of Paterson and the Great Falls Preservation and Development Corporation requires that the City "...create a museum or cultural center on the first floor of the building...designed to highlight and showcase the history and potential of industrial Paterson." If the Paterson Museum were to relocate, there would apparently be an obligation to locate a similar function within the building. Similarly, any expansion of the Museum within the building would need to

take into account the current lease arrangement.

IX. PRIORITIZED RECOMMENDATIONS

INTRODUCTION

This recommendations section will provide guidance for future work. It incorporates the recommendations of the building analysis, code review and engineering systems analysis sections.

For both the exterior and the interior, "rehabilitation" will be the overarching treatment philosophy. Under this philosophy, the existing materials will be maintained whenever possible, will be repaired where necessary and will be replaced only where repair is not an option.

In general, we recommend three levels of repair: Immediate, Short Term and Long Term:

- Immediate are those repairs and recommendations that must be completed to remedy safety concerns or to protect the building. We recommend that these repairs be undertaken immediately and be completed within 1-2 years.

- Short Term are those recommendations and repairs which can most efficiently be undertaken in conjunction with the overall rehabilitation of the building and/or repairs. They are based on the program requirements for new use and if delayed, will not pose a threat to the building, its fabric or its users. We recommend that work in this category be completed within 3-5 years.

- Long Term are those repairs and recommendations which relate to the interpretation of the building and the site. Deferment of these recommendations will not create hazardous conditions for the building or its users.

Following is the prioritized list of recommendations and repairs as identified and discussed in the previous chapters of this preservation plan.

IMMEDIATE RECOMMENDATIONS

North Addition

Repairs to the North Addition where roof trusses have collapsed and where there has been damage to the exterior walls. New roof and floor structure needs to be installed, new windows, new roofing, and the exterior brick walls repaired and pointed. Temporary stabilization needs to be done immediately while the HVAC system is redesigned. The goal is to remove equipment from this area so that the complete gable roof can be reconstructed and protect the interior. This work will prevent this situation from happening in the future, and will perhaps allow the second floor of the North Addition to be used for another function, such storage for the Museum. Note: This stabilization and repair work should be characterized as an "emergency" as the loose bricks, etc., present a danger to the public.

Site

The volunteer trees and ivy need to be removed and cut back annually to ensure protection of the building. The landscaping should also be kept clear as the Paterson Museum does outdoor interpretation with school children. The overgrowth is a tripping hazard.

The sidewalk along the parking lot needs to be replaced.

Doors
Repair/replace/redesign double doors of west elevation. This work is important to complete in conjunction with the installation of new HVAC systems.

These locomotive doors date to the 1970s rehabilitation but are supposed to be based on the original. To be sure, doors existed here and they probably contained a lot of glass for maximum light on the work floor. Originally housed within arched openings like the equivalent openings on the east elevation, these twelve sets of doors are a crucial character defining feature of the building as they identify the original floor plan of the building where locomotive were assembled side-by-side rather than in an assembly-line fashion. This plan is a late example of the earliest way locomotives were assembled. Each of the 12 doors represent an erecting bay where individual locomotives were assembled vertically inside the building. The number of bays represented the maximum capacity of the building to erect 12 locomotives at a time. Although these openings were changed throughout the use of the building, even including bricking them up, their original configuration with paired operable doors is a significant character defining feature of the building and should be continued.

However, problematically, twelve sets of large doors with lots of windows is not an ideal configuration for a museum where climate and sunlight control are vital to permanently maintain the museum collections. Additionally, the existing doors are not historic and are a conjectural design based on other examples within the Rogers campus.

New doors should be installed in the 12 openings that from the exterior, still read as doors with wood and glass but that are better suited for a museum including UV protection. At least one set should be operable; the rest can be fixed.

Cornices
The side aisle cornices and gutters need major repair and, in some areas, replacement. The upper cornices need repair especially at the western ends.

All cornice and wood trim needs to be repainted.

Wood features at gable roof
Repair/replace wood features including stair tower and cupola base. The sections that meet the roof will require significant replacement of the wood siding. Flashing details should be corrected. Repaint both.

Roofs
The rubber membrane roofs over the “side aisles” need to be replaced.

While the slate roof is good condition, snow guards or bars should be installed.

Splash blocks should be added at the base of leaders.

Structure
The six timber knee braces at the roof trusses that have been notched should be repaired/ reinforced.

Elevator
Replace the failing passenger elevator controller.

Mold Remediation

There is some concern that there may still be mold in the basement from previous water infiltration. This should be checked; if found, remediation should occur immediately.

Mechanical Systems

Replace HVAC system. The systems for the Museum should address the needs of the collections being housed in the space.

Provide blank cover plates for all unused openings in all electrical panels

Provide covers for all open junction boxes

Check functionality of third floor MER panel breakers for condensing units

Install full coverage automatic smoke detector addressable fire alarm system

Provide new gas-fired high efficiency domestic hot water heaters per floor. Existing domestic water piping should also be replaced with new.

Provide a new sump pumping system in the basement boiler room.

SHORT TERM RECOMMENDATIONS

Site

Resurface the parking lot.

Masonry

Repoint designated areas of brick and stone foundation, brick walls, sandstone sills and brick lintels, approximately 30% with additional attention to the areas of significant efflorescence under the sills on the south and east elevations. In conjunction with the repointing campaign the masonry should be cleaned using the gentlest means necessary, especially the areas of efflorescence.

Repoint 100% of the brownstone belt course on the west elevation. Replace missing brownstone section at southern end, match existing in size, color and profile.

Limited spot pointing of approximately 20% of the chimneys.

Repoint 50% of the large brick smoke stack on the east elevation.

Windows

There are almost 170 windows in this building; as such, they are one of the building's most important character-defining feature. However, the existing wood sash and window components date to the 1970's rehabilitation and are not, therefore, historic. According to Page Cowley's 2002 report, all the windows and their components are made of southern pine which is not considered a good wood to use for windows. Because the material used is not the best and because the windows are not original fabric, as windows require replacement, new sash using naturally weather resistant wood (such as cedar) should be used. A window-by-window survey will be required to make this decision.

The clerestory windows are in the worst condition followed by the first floor windows, especially the wood sills and bottom rails.

For the clerestory windows: Assume 75% replacement, 25% repair with 100% replacement of the wood sills.

For the 1st floor windows: Assume 25% replacement, 25% repair with 50% replacement of the wood sills.

Paint all wood trim and windows.

Doors
Repair the tongue and groove wood entrance doors on the east, south and north elevations as requires. Refinish.

Install second accessible entrance. When originally opened, the Paterson Museum had an entrance off the west elevation on Spruce Street. This should door be reopened as an accessible entrance. Because it is at grade, no ramp will be required. A historically sympathetic canopy or some sort of identifying feature (beyond the existing sign) should be installed. This feature will help market the museum to cars and pedestrians; importantly, it should be visible to people coming down Spruce Street from the Great Falls. The doors should be repaired as required, refinished and accessible hardware should be installed.

Repair the fixed cargo doors on the upper stories of the north and south elevations as required. Refinish.

Repair the tongue and groove doors off the fire escape on the south elevation. Refinish.

Stairs
Repoint the short sets of stairs on the north and south elevations as required.

Repair/rebuilt the stairs off the east elevation.

Fire Escape
Check the fire escape for stability and repaint.

Hoisting mechanisms
Continue to maintain these significant character defining features that are important remnants of the building's industrial history.

Signage
Install temporary and historically appropriate signage or banner, especially along Spruce Street, to announce the presence of the museum. With its only entrance on the east elevation, it is often missed. This is especially important now that the Great Falls have become a National Park.

Parking
Designate additional parking for museum use in lot across the street.

First Floor, the Paterson Museum
To add additional space for exhibition and public programming, remove back of the house office and archival space currently in the center addition. Open this up for additional exhibition space and/or a small class room for classroom programming.

First Floor, the Hannah Gallery
Open up the office space currently located within the gallery and convert to classroom space or remove the walls and open up for additional exhibition space.

Second Floor
Relocate museum offices, archival storage and collections care spaces to the second floor. Expand the archival square footage by three times and provide a room for collections and exhibition processing. Provide office space for relocated Great Falls Historic Preservation and Development Corporation.

Upgrade lighting in public areas on all floors.

Code Requirements
Provide additional lavatory and water closet fixtures. Approximately 20 additional fixtures are required. Upgrade ventilation in conjunction with added fixtures. Upgrading the city water service will need to be considered with the additional fixtures. Provide accessible restrooms on each floor.

Upgrade door hardware for accessibility.

LONG TERM RECOMMENDATIONS

Check swale around the building to make sure that it drains properly and is not causing any water infiltration into the basement. Add additional drainage if required.

Upgrade or replace the freight elevator.

Repair upper story windows as required

ANNOTATED SECRETARY OF THE INTERIOR'S STANDARDS FOR THE PROPOSED RECOMMENDATIONS

The Secretary of the Interior's Standards are a ten-step framework that is used as a guide for preservation projects. The recommendations, although general in nature, provide a treatment philosophy that should be followed in the future work. As stated above, the recommended treatment is "rehabilitation":

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

The current mixed uses of the building including museum and offices is compatible with the historic industrial use of the building. The public areas, especially the museum, retains it open feel and historic character. While the upper stories have been broken up into smaller spaces, the character defining features of exposed structural systems including framing and columns, the exterior brick walls with decorative arches and the multi-light oversized windows remain.

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

The character defining features of this industrial building remain. On the exterior this includes the 12 pairs of locomotive doors on the west elevation and the cargo doors and hoisting equipment on the north and south elevations, the smoke stack and the oversized windows. Historic materials were retained as much as possible in the 1970s, although significant deterioration means that replacement materials were necessary but the character remains. This will continue and all efforts will be made to repair the existing materials.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

This occurred in the 1970s work and will continue. All efforts will be made to repair the existing materials and where not possible, the new materials will be fully documented.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

The Rogers Erecting Shop evolved with numerous additions and changes throughout its lifetime including with the 1970s

rehabilitation. Materials from all eras will continue to be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

The industrial character of the building—including the exposed oversized structural members, brick, decorative brick and arches and large windows—will continue to be preserved.

6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

This occurred in the 1970s work and will continue. All efforts will be made to repair the existing materials and where not possible, the new materials will be match.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

The gentlest means possible should always be used for cleaning.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

This is a significant archaeological resource and all measures will be taken to preserve these irreplaceable and important features.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

No additions will be required.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

No additions will be required.

IMPACT OF THE PROPOSED RECOMMENDATIONS

The proposed work addresses immediate, short and long-term maintenance and capital needs. For instance, there are immediate safety issues that must be addressed. In addition, a number of spaces in the building do not have adequate (or any) HVAC, which affects not only the comfort of the occupants, but also the condition of the existing building fabric and the condition of collections and artifacts stored and displayed in the building. Replacing these systems is crucial for the on-going viability and occupancy of the Locomotive Works. Similarly, the items identified for repair and or replacement on the exterior are important for keeping the building secure and watertight.

REASONING FOR THE CAPITAL PROJECT

Although the Rogers Locomotive Works Erecting Shop has been occupied with a vibrant mix of uses that have been a benefit to the community and which have helped to preserve the building, there are now clearly a number of maintenance and longer term capital projects that must be undertaken to keep the building usable for its current and future tenants and to preserve the building for future generations.

X. CYCLICAL MAINTENANCE PLAN

INTRODUCTION

The most effective tool for continued preservation of the Rogers Locomotive Works Erecting Shop is cyclical maintenance and continued, regular occupancy. The Great Falls Preservation and Development Corporation currently provides maintenance for the building, and has attempted to be a responsible steward. However, there are a number of building features that have not had regular maintenance, and a number of building systems that have no reached the ends of their useful lives. These items should be addressed as part of a larger rehabilitation project. Once funding is found and major work completed, a clearer delineation of responsibilities for maintenance and capital improvements should be implemented so that the building does not reach this level of disrepair and dysfunction in the future.

Clarke Caton Hintz recommends that the building owners (the City of Paterson) and the building managers (the Great Falls Preservation and Development Corporation) establish a system to monitor and maintain each building system (site, building envelope, mechanical, electrical, plumbing, structure, interior, etc.). This will avert larger and more costly problems in the future. It is also recommended that dedicated funds be provided for yearly maintenance. Again, providing regular inspections and maintenance reduces long-term costs and lengthens the time between major renovation projects.

The following represents a plan for building maintenance above and beyond general housekeeping issues. Adhering to the schedule will identify new or potential problems early before those issues become more costly. Critical to the success of this inspection program will be the assignment of appropriate personnel. The City and the Corporation should identify appropriate personnel who have experience or knowledge of the specific systems they are asked to investigate and maintain. Contracts with appropriate, certified service companies should also be maintained. Once personnel and service companies are assigned, they should be charged with coordinating the various inspections. They will understand all of the needs of the building and will best be able to coordinate maintenance/capital efforts. Formal inspections should be considered several times per year but the maintenance personnel should keep a general lookout for deterioration between inspections. In addition, the City and/or Corporation should consult with a professional (architect, engineer or contractor) every five to ten years as oversight to the cyclical maintenance plan.

All maintenance shall be completed in accordance with the respective equipment manufacturer's recommendations, but minimally shall include the following tasks and frequencies:

System	Task #	Task	Frequency												Remarks
			Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec	
Site	S1	Review Drainage/Standing Water				X						X			• Special Inspections may be required after severe weather • Potholes and cracks should be repaired on a regular basis
	S2	Review Vegetation on walls/proximity of trees, branches, etc. to building					X						X		• Branches, shrubs, vegetation, should be 24" clear, min. from building
	S3	Inspect steps, sidewalks, ramps				X						X			• Special inspections may be required after severe weather • Repair cracks and eliminate tripping hazards
	S4	Verify health of trees/shrubs					X								
	S5	Prune Trees										X			• Prune when plants are dormant
Building Envelope	BE1	Inspect doors and frames				X						X			• Lubricate operating parts • Inspect for proper function
	BE2	Inspect brick				X									• Check for spalling – if present review with architect
	BE3	Inspect mortar joints				X									• Check for crumbling/failing joints • Spot re-point as required
	BE4	Inspect exterior paint finishes				X									• Check for peeling/blistering • Split blisters, scrape, sand and touch-up; repaint all surfaces every 5-8 years as required.
	BE6	Inspect roofs				X									• Inspect for worn or loose slate shingles • Replace missing shingles • Check "low-slope" areas for ponding, deterioration, leaks, etc. • Repair leaks as required
	BE7	Screen all vents/ fill all envelope "holes"										X			• This will prevent animals nesting during winter
	BE8	Inspect windows	X			X			X			X			• Check for cracked/broken glass • Inspect for proper function • Inspect glazing and painting
	BE9	Clean exterior windows				X									
	BE10	Inspect water conduction	X			X			X			X			• Look for leaks/ blockage in gutters, downspouts and drains in low-slope areas • Clean/repair leaks/blockage • Re-attach loose sections as necessary
	BE11	Inspect all caulk/sealant joints				X						X			• Re-caulk as required • Apply new caulking every 6 years
	BE12	Inspect exterior woodwork				X						X			• Check for moisture, warping and splitting • Infill small cracks with wood putty • Touch up paint as required
Structure	ST1	Check for cracked or split structural members – floor joists				X									• If cracking/splitting occurs – consult architect/engineer
	ST2	Check for cracked/split roof rafters				X									• If cracking/splitting occurs- consult architect/ engineer

System	Task #	Task	Frequency												Remarks
			Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec	
Mechanical	M1	Operational inspection – air handlers and fan coils				X						X			• Inspect general condition • Sequence test for proper operation • Tighten all electrical connections • Check operation of all temperature controls • Check operation of all dampers • Check operation of all safeties
	M2	Replace all filters – air handlers and fan coils	X			X			X			X			
	M3	Inspect elect. disconnect- air handlers				X									• Tighten all electrical connections • Verify proper operation
	M4	Inspect supply and return air fan assembly –air handlers at each refrigeration compressor, refrigerant charge, operating pressures/temperatures and motor insulation resistance				X						X			• Clean dirt accumulation • Check bearings for excessive wear and end play • Lubricate bearings • Inspect and adjust drive pulleys and belts • Replace drive belts as required
	M5	Inspect heating and cooling coils and clean – air handlers and fan coils				X						X			
	M6	Inspect and clean condensate pans and drains – air handlers and fan coils				X			X			X			
	M7	Operational inspection – condensing units				X									• Inspect general condition • Clean condenser coils • Sequence test for proper operation • Tighten all electrical connections • Check operation of all controls and safeties
	M8	Record operating volts/amps	X			X			X			X			
	M9	Inspect electrical disconnect – condensing units				X									• Tighten all electrical connections • Verify proper operation
	M10	Check condenser fan assembly – condensing units				X									• Clean air dirt accumulation • Check bearing for excessive wear and end play • Check bearings for excessive noise and temperature • Lubricate bearings • Record operating volts/amps
	M11	Inspect condenser coils – condensing units				X									• Inspect finned surfaces for damage and debris • Power wash coils
	M12	Check hydronic heating cooling system water chemistry and static charge	X	X	X	X	X	X	X	X	X	X	X	X	• Record operating temperatures • Record operating pressures • Record compressor operating volts/amps • Check motor insulation resistance
	M13	Operational inspection – boilers	X			X			X			X			• Inspect general conditions

System	Task #	Task	Frequency												Remarks
			Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec	
															• Check piping/values for leaks • Check for proper combustion air
	M14	Testing – boilers									X				• Sequence test for proper operation
	M15	Check controls – boilers									X				• Tighten all electrical connections • Adjust feedwater system • Adjust low water cut-off device • Adjust pressure controls • Check flame program controls • Check operation of all safeties • Check operation of all temperature controls
	M16	Water side inspection – boilers									X				• Blow down boilers and float chambers • Check operation of safety and relief valves • Check expansion tank • Service expansion tank as required
	M17	Fire side inspection – boilers								X					• Inspect all surfaces and refractory • Clean all surfaces and refractory • Check flue pipe and draft regulator • Check and adjust gas pressure safety switches • Check and clean pilot and pilot safety • Clean burners • Clean power blower
	M18	Inspect electrical disconnect – pumps								X					• Tighten all electrical connections • Verify proper operation
	M19	General Inspection – pumps				X				X					• Inspect general condition • Sequence test for proper operation • Tighten all electrical connections • Clean strainers • Inspect gaskets for leaks/deterioration • Check seals or packing and mechanical seals for leaks • Check bearings and alignment for excessive vibration
	M20	Motor inspection – pumps								X					• Examine motor mounts • Lubricate bearings • Record operating volts/amps
	M21	Electrical disconnect – Fans								X					• Tighten all electrical connections • Verify proper operation
	M22	Motor inspection –Fans								X					• Clean dirt accumulation • Check bearings for excessive wear and end play • Check bearing for noise and temperature • Lubricate bearings

System	Task #	Task	Frequency												Remarks
			Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec	
															• Adjust drive pulleys and belts • Replace drive belts • Record operating volts/amps
	M23	Check sheet metal								X					• Check for cracks or damaged areas • Check for damages or loose sections • Check substrate and replace/repair
Electrical	E1	Inspect Panel Boards				X									
	E2	Tighten electrical connections				X									
	E3	Check power at outlets				X									• Verify power/grounding exists
	E4	Check fixtures	X			X			X			X			• Replace bulbs as required
Fire Alarm/Fire Safety	F1	Test fire alarm													• Test for proper function
	F2	Test fire extinguisher								X					• Refill/replace as required/ check certification
	F3	Exit Signage								X					• Test for proper function
	F4	Sprinkler System													• Refer to attached schedule
Plumbing	P1	Inspect fixtures				X				X					• Test for proper function and repair as required
	P2	Inspect domestic water piping				X									• Check for leaking
	P3	Inspect sanitary piping				X									• Check for leaking
	P4	Inspect water heaters				X									• Test for proper function; provide recommended service
Interiors	I1	Shampoo carpets				X						X			
	I2	Clean/shampoo walk off mats	X			X			X			X			
	I3	Clean interior windows	X			X			X			X			
	I4	Inspect exterior walls	X			X			X			X			• Inspect for leaking and efflorescence. Contact architect if this occurs • Monitor cracks for expansion
	I5	Inspect flooring	X			X			X			X			• Inspect flooring for worn/broken sections • Replace deteriorated sections • Do not seal flooring
	I6	Clean woodwork/trim	X			X			X			X			• Wash surfaces with detergent, softwater and sponge – do not use alkaline household cleaning products
	I7	Inspect interior painting	X			X			X			X			• Check for isolated blistering and moisture penetration • Split blisters, scrape, sand and touch up • Repair roof if there is evidence of water leaking

SUMMARY

All activities performed with respect to the cyclical maintenance plan should be kept in a log. In general, each activity should detail the task to be performed, work undertaken, dates, costs incurred, personnel involved and photographic documentation as required. The City and/or Corporation should review periodically for repeated repairs which may indicate serious problems.

In addition to the items indicated in the chart above, Clarke Caton Hintz recommends the following ongoing general maintenance concerns:

- Monitor basement/ crawl space in varying weather conditions. Moisture penetration may be a sign of a serious problem.
- Monitor roof/ drainage. Blocks or leakage could lead to moisture penetration and potential structural damage.
- Clean basement/ crawl space. Remove all items currently stored in these locations as they are not appropriate for storing furniture and artifacts.
- Use white pellet urea for snow/ ice melting. Keep salt based de-icing away from the building.
- Maintain overstock of materials such as paint, caulk, etc. to use for spot repairs.

Clarke Caton Hintz also recommends the following tasks be performed weekly:

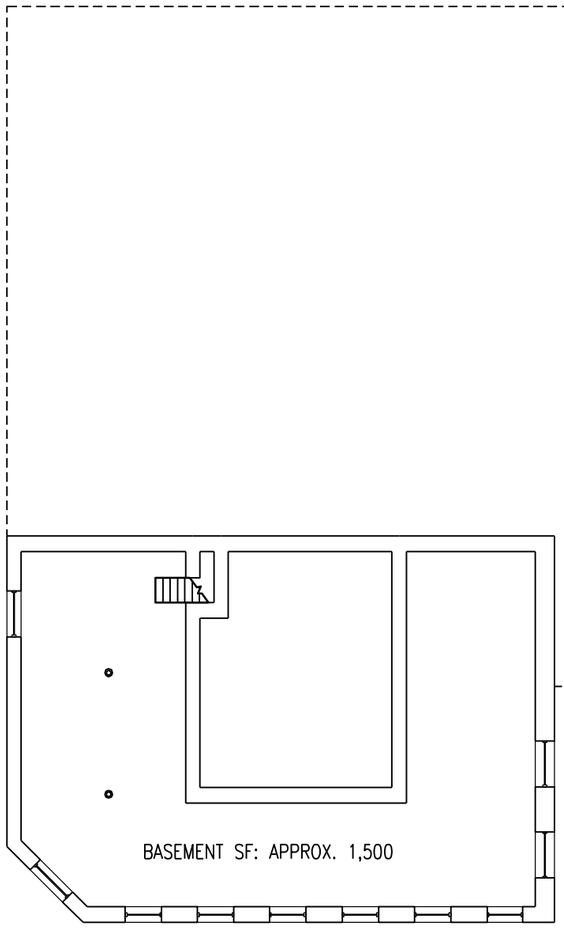
- Sweep/ clean floors (this will help with preserving floor finishes).
- Vacuum carpeted surfaces.
- Remove and shake exterior mats.
- Sweep walks, stairs and ramps, especially under mats.
- Look for evidence of pests. Coordinate with a pest control firm if necessary.

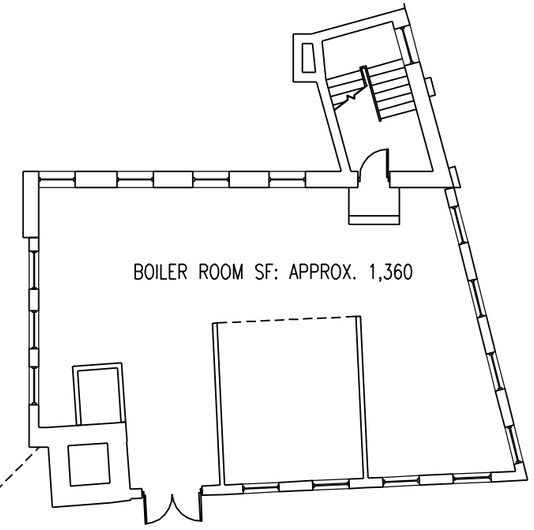
The National Trust for Historic Preservation offers material on the care and maintenance of historic religious facilities. In addition, the City/ Corporation should consult the Cyclical Maintenance Plan published by the New Jersey Historic Trust. Finally, the City/ Corporation may wish to consider purchasing "Cyclical Maintenance for Historic Buildings", written by J. Henry Chambers.

Table 5.1.1.2 Summary of Sprinkler System Inspection, Testing, and Maintenance

Item	Frequency	Reference
Inspection		
Gauges (dry, preaction, and deluge systems)	Weekly/quarterly	5.2.4.2, 5.2.4.3, 5.2.4.4
Control valves		Table 13.1.1.2
Waterflow alarm devices	Quarterly	5.2.5
Valve supervisory signal devices	Quarterly	5.2.5
Supervisory signal devices (except valve supervisory switches)	Quarterly	5.2.5
Gauges (wet pipe systems)	Quarterly	5.2.4.1
Hydraulic nameplate	Quarterly	5.2.6
Buildings	Annually (prior to freezing weather)	4.1.1.1
Hanger/seismic bracing	Annually	5.2.3
Pipe and fittings	Annually	5.2.2
Sprinklers	Annually	5.2.1
Spare sprinklers	Annually	5.2.1.4
Information sign	Annually	5.2.8
Fire department connections		Table 13.1.1.2
Valves (all types)		Table 13.1.1.2
Obstruction, internal inspection of piping	5 years	14.2
Heat trace	Per manufacturer's requirements	5.2.7
Test		
Waterflow alarm devices		
Mechanical devices	Quarterly	5.3.3.1
Vane and pressure switch–type devices	Semiannually	5.3.3.2
Valve supervisory signal devices		Table 13.1.1.2
Supervisory signal devices (except valve supervisory switches)		Table 13.1.1.2
Main drain		Table 13.1.1.2
Antifreeze solution	Annually	5.3.4
Gauges	5 years	5.3.2
Sprinklers (extra-high or greater temperature solder type)	5 years	5.3.1.1.1.4
Sprinklers (fast-response)	At 20 years and every 10 years thereafter	5.3.1.1.1.3
Sprinklers	At 50 years and every 10 years thereafter	5.3.1.1.1
Sprinklers	At 75 years and every 5 years thereafter	5.3.1.1.1.5
Sprinklers (dry)	At 10 years and every 10 years thereafter	5.3.1.1.1.6
Sprinklers (in harsh environments)	5 years	5.3.1.1.2
Valves (all types)		Table 13.1.1.2
Valve status test		13.3.1.2.1
Maintenance		
Valves (all types)		Table 13.1.1.2
Low-point drains (dry pipe system)		13.4.4.3.2
Sprinklers and automatic spray nozzles protecting commercial cooking equipment and ventilation systems	Annually	5.4.1.9
Investigation		
Obstruction		14.3

Appendix A





TOTAL BUILDING SF: APPROX. 51,615

PLAN NORTH

Clarke Caton Hintz

Architecture
Planning
Landscape Architecture

100 Barrack Street
Trenton, NJ 08608
tel: (609) 883 8383
fax: (609) 883 4044

www.clarkecatonhintz.com

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ARCHITECT
NJ LICENSE NO 21A101192700

JOHN D.S. HATCH, AIA

DATE: 09/01/16

PROJECT NAME
ROGERS LOCOMOTIVE WORKS ERECTING SHOP

DRAWING TITLE
BASEMENT FLOOR PLAN

DATE:	PROJECT#
09/01/16	1952
SCALE	DRAWN BY
1/16"=1'-0"	LB

A-100

A-100.dwg

FIRST FLOOR SF: APPROX. 17,830

TOTAL BUILDING SF: APPROX. 51,615

PLAN NORTH

Clarke Caton Hintz

Architecture
Planning
Landscape Architecture

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ARCHITECT
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JOHN D.S. HATCH, AIA

DATE: 09/01/16

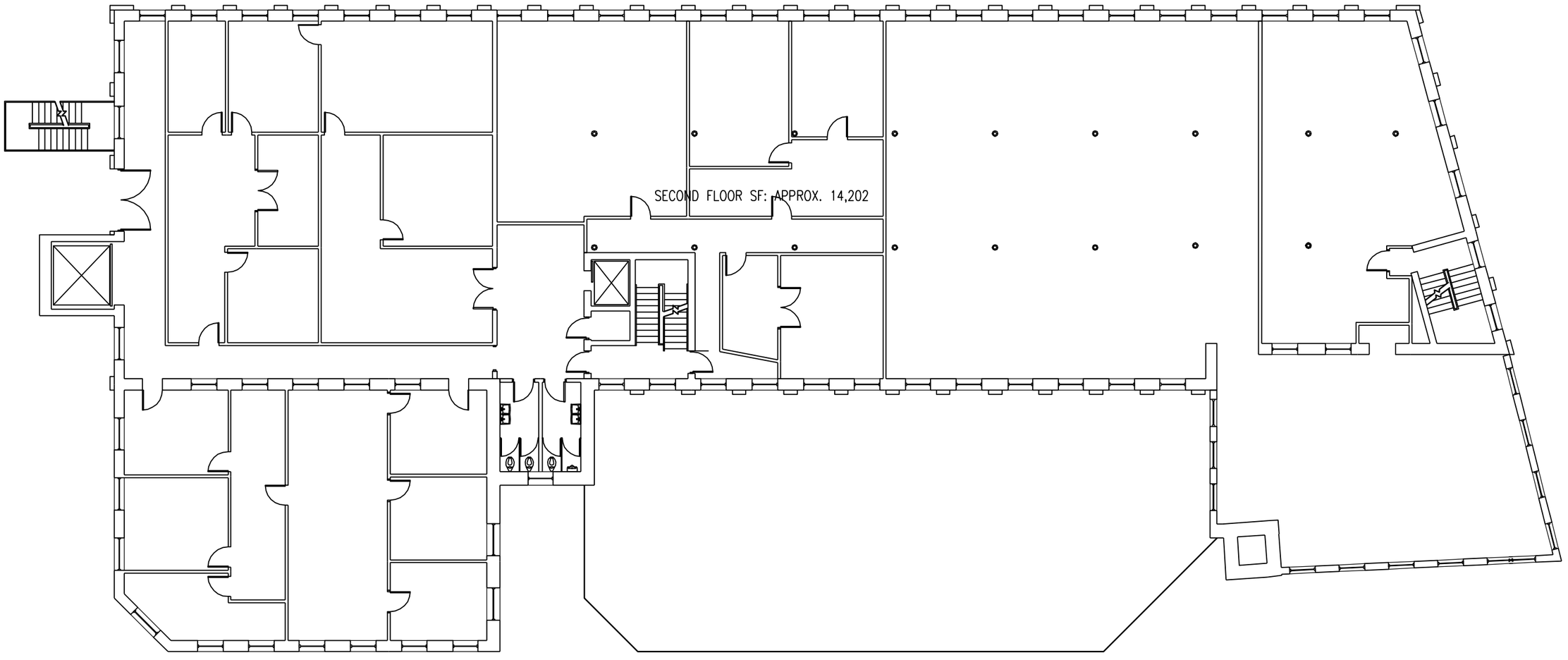
PROJECT NAME
ROGERS LOCOMOTIVE WORKS ERECTING SHOP

DRAWING TITLE
FIRST FLOOR PLAN

DATE:	PROJECT#
09/01/16	1952
SCALE	DRAWN BY
1/16"=1'-0"	LB

A-101

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TOTAL BUILDING SF: APPROX. 51,615

PLAN NORTH

Clarke Caton Hintz

Architecture
Planning
Landscape Architecture

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DATE: 09/01/16

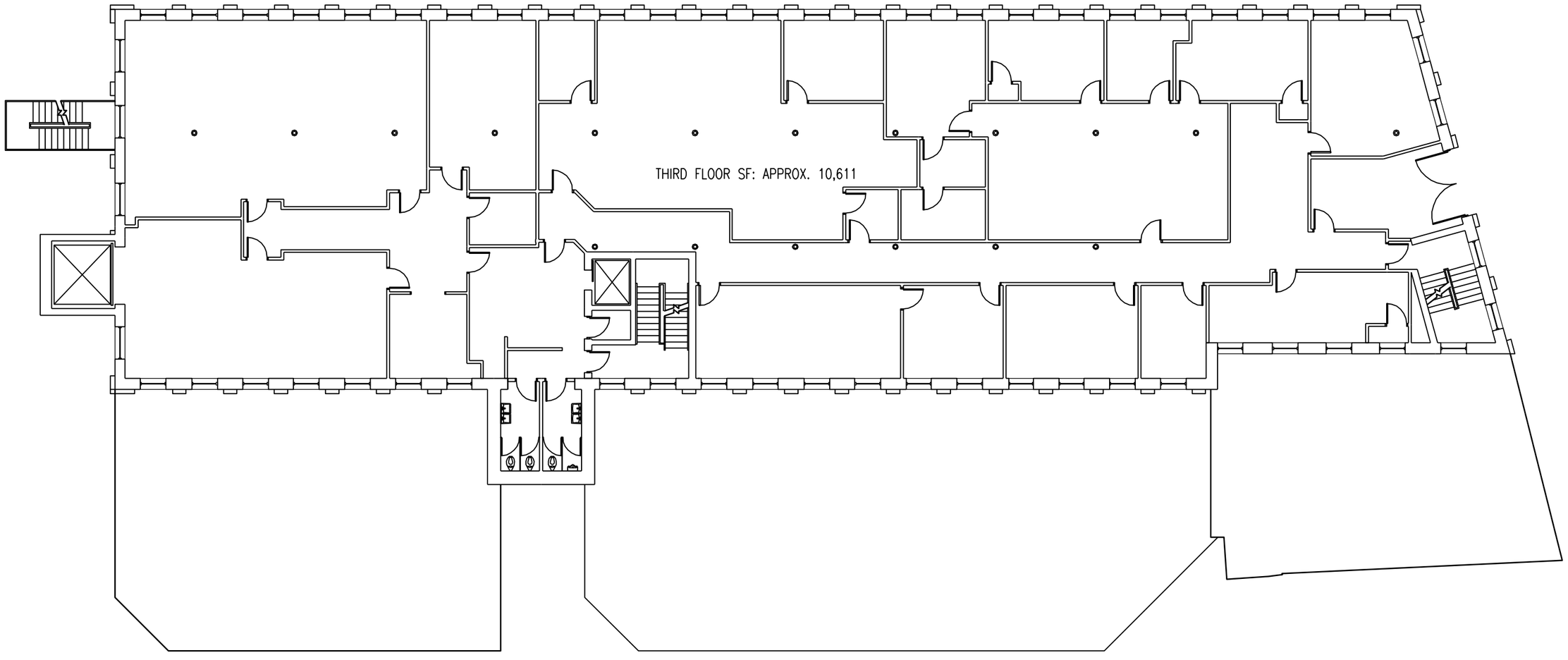
PROJECT NAME
ROGERS LOCOMOTIVE WORKS ERECTING SHOP

DRAWING TITLE
SECOND FLOOR PLAN

DATE:	PROJECT#
09/01/16	1952
SCALE	DRAWN BY
1/16"=1'-0"	LB

A-102

A-102.dwg



TOTAL BUILDING SF: APPROX. 51,615

PLAN NORTH

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DATE: 09/01/16

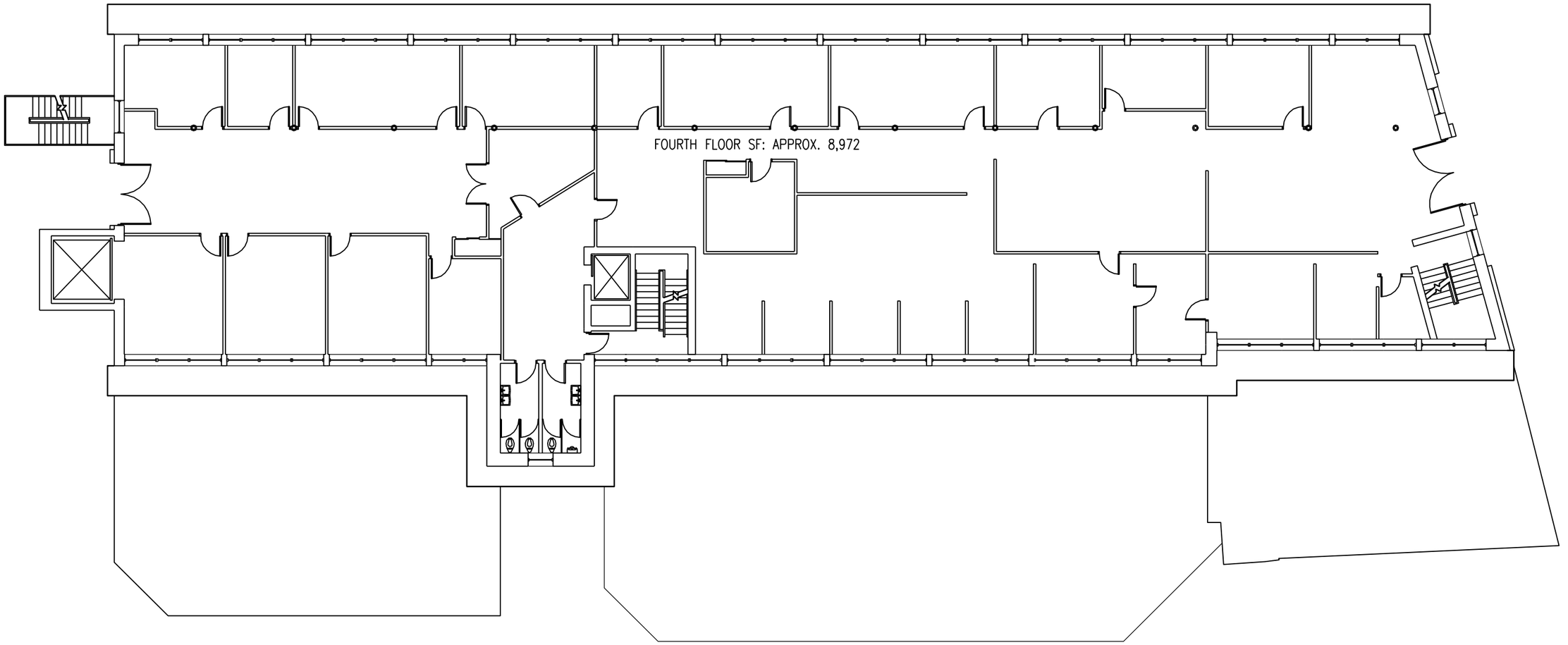
PROJECT NAME
ROGERS LOCOMOTIVE WORKS ERECTING SHOP

DRAWING TITLE
THIRD FLOOR PLAN

DATE:	PROJECT#
09/01/16	1952
SCALE	DRAWN BY
1/16"=1'-0"	LB

A-103

A-103.dwg



TOTAL BUILDING SF: APPROX. 51,615

PLAN NORTH

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DATE: 09/01/16

PROJECT NAME
ROGERS LOCOMOTIVE WORKS ERECTING SHOP

DRAWING TITLE
FOURTH FLOOR PLAN

DATE:	PROJECT#
09/01/16	1952
SCALE	DRAWN BY
1/16"=1'-0"	LB

A-104

A-104.dwg

Appendix B

Project: Rogers Locomotive
Number: 16098E1
Client: Clarke Caton Hintz
Date: September 19, 2016
Phase: Concept

BECKER & FRONDORF
Construction Cost Consulting • Project Management

ESTIMATE SUMMARY

CODE	DESCRIPTION	51,600	SF		COST
A	Building Assessment - Immediate			$31	$1,608,000
B	Building Assessment - Short Term			$96	$4,945,000
C	Building Assessment - Long Term			$21	$1,097,000
D	Structural - Immediate			$4	$227,000
E	Structural - Short Term				None Listed
F	Structural - Long Term				None Listed
G	Mechanical & Electrical - Immediate			$79	$4,100,000
H	Mechanical & Electrical - Short Term			$5	$282,000
I	Mechanical & Electrical - Long Term				None Listed
J	Code Review - Immediate				None Listed
K	Code Review - Short Term			$6	$319,000
L	Code Review - Long Term				None Listed
	Total			$244	**$12,578,000**

Notes
Cost are current, for Autumn 2016; escalation costs are not included.
Costs for further analysis, checking, maintenance, and designations are not construction costs and not included.
Hazardous materials abatement costs, if any, are not included.
Fees and other soft costs are not included.

.

ESTIMATE

Proj: Rogers Locomotive
Date: September 19, 2016

CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
A	Building Assessment - Immediate				
A1	North Addition Repairs - Temp. Stabilization	1	LS	20,000.00	20,000
A2	- Demolition	1,500	SF	10.00	15,000
A3	- Roofing/Slate	1,500	SF	75.00	112,500
A4	- Rebuild Parapet	70	LF	400.00	28,000
A5	- Repoint Wall/Assume34' H/100%	2,500	SF	22.50	56,250
A6	- Restore Windows	21	EA	4,800.00	100,800
A7	Exterior Wood Trim - Repair/Repaint Cornice	900	LF	50.00	45,000
A8	- Repaint Windows/Exterior	220	EA	400.00	88,000
A9	- Gable Roof/Cupola/Wood Features/Replace	1	LS	75,000.00	75,000
A10	Site - Remove/Trim Plantings/No Scope	1	LS	5,000.00	5,000
A11	- New Sidewalk @ Parking	2,000	SF	15.00	30,000
A12	Doors - Repair/Rebuild/Replace Large @ West	12	PR	25,000.00	300,000
A13	Roofing - Replace @ Side Aisles	440	LF	500.00	220,000
A14	- Snow Guards/No Scope/Allowance	1	LS	10,000.00	10,000
A15	Elevator - New Controller	1	LS	35,000.00	35,000
A16	Mold Abatement	1	LS	-	TBD
A17					0
A18					0
A19					0
A20					0
A21					0
A22					0
A23					0
A24					0
A25					0
A26					0
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A28					0
A29					0
A30					0
A31					0
A32					0
A33					0
A34					0
A35					0
A36					0
A37					0
A38					0
A39					0
A40					0
A41					0
A42					0
	Subtotal				**$1,140,550**
	General Conditions / O. H. & P. / Bond		17.5%		$199,450
	Design Contingency		20.0%		$268,000
	Total				**$1,608,000**

.

ESTIMATE

Proj: Rogers Locomotive
Date: September 19, 2016

CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
B	Building Assessment - Short Term				
B1	Site - Resurface Parking Lot	2,900	SY	20.00	58,000
B2	Walls - Repoint Brick/Stone/30%	13,000	SF	22.50	292,500
B3	- Clean Masonry/100%	43,200	SF	2.50	108,000
B4	- Repoint Belt Course @ West	200	LF	25.00	5,000
B5	- Replace Missing Stones/Assume 10 EA	10	EA	400.00	4,000
B6	- Repoint Chimneys/20%/Scope Unclear	1	LS	2,000.00	2,000
B7	- Repoint Stack/50%	800	SF	30.00	24,000
B8	Windows - 1st Flr/Restore @ N/E/W/25%	8	EA	6,400.00	51,200
B9	- 1st Flr/New @ N/E/W/25%	8	EA	4,800.00	38,400
B10	- 1st Flr/New @ N/E/W/Repaint Only/50%	16	EA	4,800.00	76,800
B11	- Clerestory/Assume 4' H/New/75%	1,600	SF	175.00	280,000
B12	- Clerestory/Assume 4' H/Restore/25%	1,600	SF	125.00	200,000
B13	Doors - Restore/per Leaf (incl. Fire Escape)	11	EA	1,000.00	11,000
B14	- Handicap Entry/MO/Door/Canopy	1	LS	10,000.00	10,000
B15	- Refinish Cargo Doors	2	PR	2,000.00	4,000
B16	Stairs - Repoint/Not Shown/Allowance	1	LS	5,000.00	5,000
B17	- Rebuild East Stairs/Not Shown/Allowance	1	LS	10,000.00	10,000
B18	Fire Escape - Repaint/per Flight	4	EA	2,500.00	10,000
B19	Signage - Allowance/No Scope	1	LS	10,000.00	10,000
B20	Reprogramming - Rework Museum Offices	2,820	SF	200.00	564,000
B21	- Rework Hannah Gallery	2,410	SF	200.00	482,000
B22	- Rework Second Floor for Archives	5,600	SF	175.00	980,000
B23	Toilet Rooms - Renovate Existing/Not Shown	8	EA	22,500.00	180,000
B24	- New Single User/ADA	8	EA	12,700.00	101,600
B25					0
B26					0
B27					0
B28					0
B29					0
B30					0
B31					0
B32					0
B33					0
B34					0
B35					0
B36					0
B37					0
B38					0
B39					0
B40					0
B41					0
B42					0
	Subtotal				**$3,507,500**
	General Conditions / O. H. & P. / Bond		17.5%		$613,500
	Design Contingency		20.0%		$824,000
	Total				**$4,945,000**

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ESTIMATE

Proj: Rogers Locomotive
Date: September 19, 2016

CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
C	Building Assessment - Long Term				
C1	Windows - 2nd/3rd Floors/Restore	110	EA	4,800.00	528,000
C2	Freight Elevator - New @ Existing Shaft	1	LS	250,000.00	250,000
C3					0
C4					0
C5					0
C6					0
C7					0
C8					0
C9					0
C10					0
C11					0
C12					0
C13					0
C14					0
C15					0
C16					0
C17					0
	Subtotal				**$778,000**
	General Conditions / O. H. & P. / Bond		17.5%		$136,000
	Design Contingency		20.0%		$183,000
	Total				**$1,097,000**
D	Structural - Immediate				
D1	North Addition Repairs - Reframe 2nd/Roof	3,100	SF	50.00	155,000
D2	Knee Braces - Repair	6	EA	1,000.00	6,000
D3					0
D4					0
D5					0
D6					0
D7					0
D8					0
D9					0
D10					0
D11					0
D12					0
D13					0
D14					0
D15					0
D16					0
D17					0
	Subtotal				**$161,000**
	General Conditions / O. H. & P. / Bond		17.5%		$28,000
	Design Contingency		20.0%		$38,000
	Total				**$227,000**

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ESTIMATE

Proj: Rogers Locomotive
Date: September 19, 2016

CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	COST
G	Mechanical & Electrical - Immediate				
G1	Fire Protection	1	LS	-	NIC
G2	Plumbing - New Water Heaters/Not Shown/Sized	4	EA	3,500.00	14,000
G3	- New Sump Pump @ Boiler Room/Not Sized	1	LS	10,000.00	10,000
G4	HVAC System - Demolition/Gut	51,600	SF	1.00	51,600
G5	- New System/Allowance*	51,600	SF	50.00	2,580,000
G6	Electrical - Replace Breakers/Scope Unclear	1	LS	15,000.00	15,000
G7	- Power & Wiring @ New HVAC Equipment	51,600	SF	1.00	51,600
G8	- Cover Plates	1	LS	5,000.00	5,000
G9	- FA System	51,600	SF	3.50	180,600
G10	- Communications	1	LS	-	NIC
G11	- Security	1	LS	-	NIC
G12					0
G13					0
G14					0
G15					0
	Subtotal				**$2,907,800**
	General Conditions / O. H. & P. / Bond		17.5%		$509,200
	Design Contingency		20.0%		$683,000
	Total				**$4,100,000**
H	Mechanical & Electrical - Short Term				
H1	Upgrade Lighting @ Elevator Lobbies	4	EA	30,000.00	120,000
H2	New Fixtures @ New ADA Toilet Rooms	16	EA	5,000.00	80,000
H3					0
H4					0
H5					0
	Subtotal				**$200,000**
	General Conditions / O. H. & P. / Bond		17.5%		$35,000
	Design Contingency		20.0%		$47,000
	Total				**$282,000**
K	Code Review - Short Term				
K1	Restrooms - Additional Plumbing Fixtures	20	EA	5,000.00	100,000
K2	- New Water Service	1	LS	75,000.00	75,000
K3	Door Hardware - Accessible/Not Shown	51,600	SF	1.00	51,600
K4					0
K5					0
	Subtotal				**$226,600**
	General Conditions / O. H. & P. / Bond		17.5%		$39,400
	Design Contingency		20.0%		$53,000
	Total				**$319,000**

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Appendix C

APPENDIX C: PHOTOGRAPH KEY



Photograph #1: Southwest view from across Market Street.



Photograph #2: South view from Market Street.



Photograph #3: Southeast view from the intersection of Market Street and Spruce Street.



Photograph #4: Southeast view from Spruce Street.



Photograph #5: Northeast view from Spruce Street.



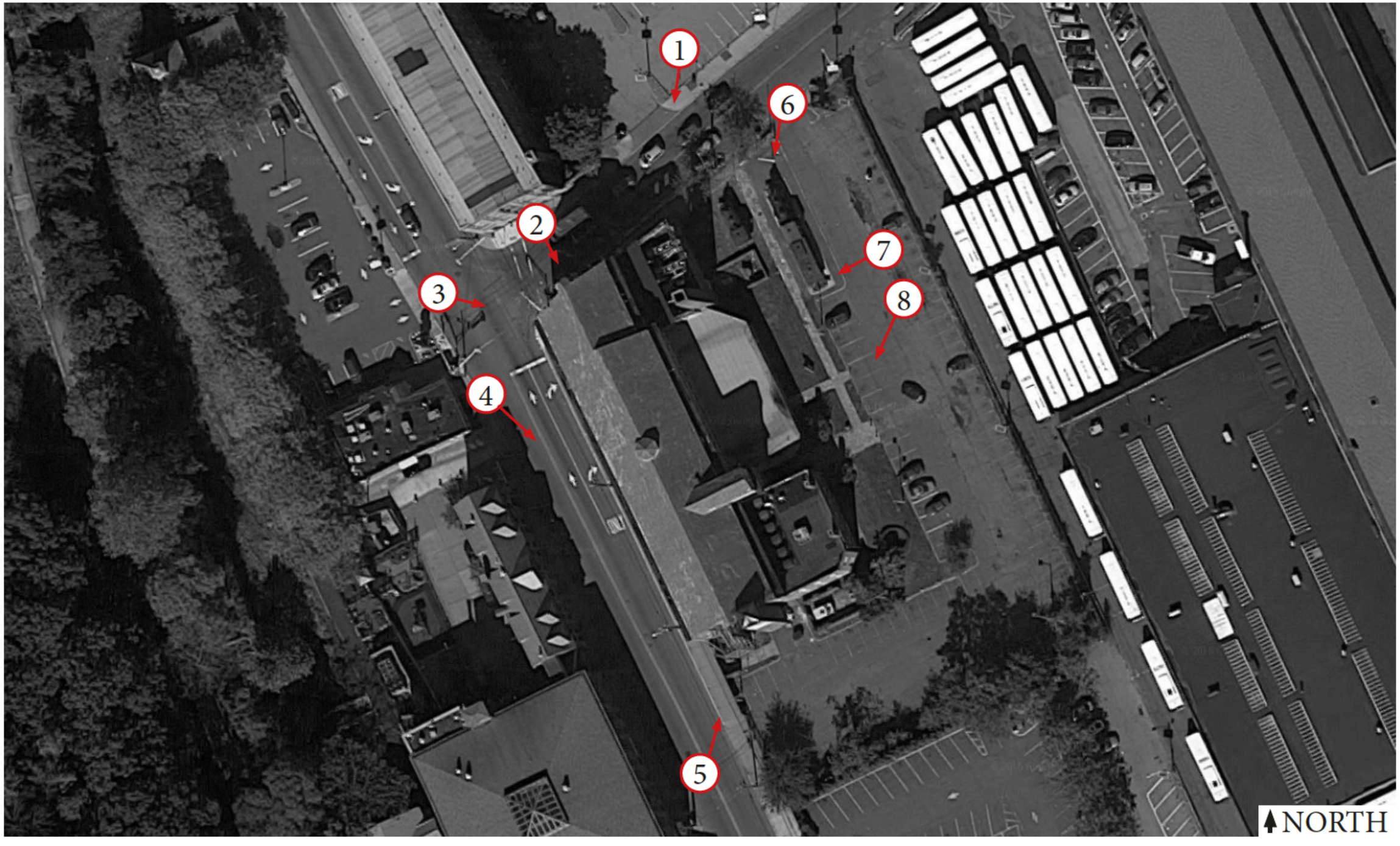
Photograph #6: Southwest view.



Photograph #7: West view.



Photograph #8: Southwest view.


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Appendix D

APPENDIX D: GLOSSARY

Addition: New construction added to an existing building or structure.

Alteration: Any act or process that changes any portion of the exterior architectural appearance or exceptionally significant interiors of a building, structure or object, including, but not limited to the erection, construction, reconstruction, or removal of any exterior architectural features or interior architectural design of a structure; treatments such as sand blasting, water blasting, chemical cleaning, chemical stopping, or removal of any architectural feature, but not including changes to the color of exterior paint.

Appropriate: Especially suitable or compatible.

Apron: A flat, broad piece of finished lumber or trim placed directly under a window sill.

Areaway: An open sunken space adjacent to basement windows or doors to provide light and air and/or access to the lower level.

Balustrade: A railing with upper and lower rails, balusters, and pedestals.

Building: A building, such as a house, barn, church, hotel, or similar construction is created principally to shelter any form of human activity. "Building" may also be used to refer to a historically and functionally related unit, such as a courthouse and jail or a house and barn. Examples include: carriage house, church, courthouse, house, library, shed, stable, store, theater, train station, garage, detached kitchen, barn, or privy.

Compatible: In harmony with location, context, setting, and historic character.

Contemporary: Reflecting characteristics of the current period. Contemporary denotes characteristics which illustrate that a building, structure, or detail was constructed in the present or recent past rather than being imitative or reflective of a historic design.

Crawl Space: Any interior space of limited height, but sufficient to permit workmen access to otherwise concealed ductwork, piping, or wiring.

Crazing: Fine, random cracks or fissures in a network on or under a surface of plaster, cement, mortar, concrete, ceramic coating, or paint film.

Demolish/Demolition: Any act or process that destroys in part or whole a building, structure, or resource. This definition often refers to deliberate demolition of a building or site or allowing a building to fall into such a state of disrepair that it becomes necessary or desirable to demolish it.

Design Guidelines: The "Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings" as adopted by the Secretary of the United States Department of the Interior, and other guidelines which may be adopted from time to time.

Dressed (stone): Finished by cutting or smoothing.

Efflorescence: An encrustation of soluble salts, commonly white, deposited on the surface of stone, brick, plaster, or mortar; usually caused by free alkalies leached from mortar or adjacent concrete as moisture moves through it.

Enlarge: To extend a building, structure, or resource beyond its existing footprint, usually through the construction of an addition or new exterior feature.

Fascia: A flat, wide, horizontal band on a wall surface, especially the bands of an architrave. (Bucher)

Fascia Board: A wide board set, vertically to cover the lower ends of rafters or the joint between the top of a wall and the projecting eaves.

Fenestration: The system (arrangement and proportioning) of openings penetrating an exterior wall system.

Flashing: Sheet metal or other flexible material formed to prevent water from entering a building or structure at joints or intersections, such as where a roof intersects a wall or chimney.

Gable: The generally triangular portion of a wall between the two sloped edges of a roof.

Gable Roof: A pitched roof with two inclined planes having equal angles that meet at a peak in the center and terminate at a vertical gable.

Gypsum Board: A wallboard having a gypsum core.

Historic Context: Patterns or trends in history by which a specific occurrence, property, or site is understood and its meaning and significance within history or prehistory is made clear. Historic contexts are historical patterns that can be identified through consideration of the history of the property and the history of the surrounding area. Historic context may relate to an event or series of events, pattern of development, building form, architectural style, engineering technique, landscape, artistic value, use of materials of methods of construction, or be associated with the life of an important person; also the setting in which a historic element, site, structure, street, or district exists.

Historic Fabric: Original or old building materials (masonry, wood, stone, metals, marble) or construction.

Historic Integrity: The ability of a property to convey its significance; the retention of sufficient aspects of location, design, setting, workmanship, materials, feeling, or associating for a property to convey its historic significance.

Historic Significance: Determines why, where, and when a property is important. Historic significance is the importance of a property with regard to history, architecture, engineering, or the culture of a state, community, or nation. The key to determining whether the characteristics or associations of a property are significant is to consider the property within its historic context. Properties can be significant for their association or linkage to events or persons important in the past, as representatives of manmade expression of culture (design/construction) or technology, or for their ability to yield important information about history or prehistory.

Integrity: The authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric period.

Jamb: The vertical piece or surface that forms the side of an opening, such as a window, door, or vault.

Joist: A structural member laid horizontally in a series from wall to wall or beam to beam, to support the weight of a floor, ceiling, or roof.

Lath: A thin, narrow strip of wood or metal used in making a supporting structure for plaster, shingles, slates, or tiles.

Leader: A vertical pipe, often of sheet metal, used to conduct water from a roof drain or gutter to the ground or cistern. Also known as a downspout.

Lintel: A horizontal beam that carries the load above an opening, such as a window or door.

Listing: the formal entry of a property in the National Register of Historic Places; also referred to as registration.

Maintain: To keep in an existing state of preservation or repair.

Mothball (Stabilization): Temporarily closing or stabilizing a building to protect it from the weather as well as to secure it from vandalism; the act or process of applying measures essential to the maintenance of a deteriorated building as it exists at present, establishing structural stability and a weather-resistant enclosure.

Muntin: A thin vertical strip of wood or metal used to separate and hold in place the panes of glass within a window sash.

National Register Criteria: The established criteria for evaluating the eligibility of properties for inclusion in the National Register of Historic Places.

National Register of Historic Places: The official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archaeological resources.

Newel Post: A tall and more of less ornamental post at the head or foot of a stair, supporting the handrail.

Nomination: Official recommendation for listing a property in the National Register of Places.

Object: The term object is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment. Examples include: boundary markers, mileposts, fountains, monuments, and sculpture.

Obscured: Covered, concealed, or hidden from view.

Period of Significance: the length of time when a property was associated with important events, activities, or person, or attained the characteristics which qualify it for National Register listing. Period of significance usually begins with a date when significant activities or events began giving the property its historic significance; this is often a date of construction. For prehistoric properties, the period of significance is the broad span of time about which the site or district is likely to provide information; it is often the period associated with a particular cultural group.

Pilaster: A shallow, often rectangular decorative element applied to the vertical surface of a wall, in order to create the look of a column without providing structural support.

Pointing: 1. In masonry, the final treatment of joints by the troweling of mortar or a putty-like filler into the joints. 2. The material with which the joints are filled. 3. The removal of mortar from between the joints of masonry units and the replacing of it with new mortar (repointing).

Portland cement: A strong, inflexible hydraulic cement used to bind mortar. Mortar or patching materials with a high Portland cement content should not be used on pre-1920 buildings. The Portland cement is harder than the masonry, thereby causing serious damage over annual freeze-thaw cycles.

Preservation: The act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Rafter: A structural member that rests on the top of a wall or other supporting surface and rises at a slope to the ridge or peak of the roof; a series of rafters supports the roof deck and eaves.

Rail: A horizontal member in the frame of a door, window, panel etc.

Reconstruction: the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

Refurbish: to renovate, or make clean, fresh, or functional again through a process of major maintenance or minor repair.

Rehabilitation: The act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

Remodel: To change a building without regard to its distinctive features or style. Often involves changing the appearance of a structure by removing or covering original details and substituting new materials and forms.

Renovate: To repair a structure and make it usable again, without attempting to restore its historic appearance or duplicate original construction methods or material.

Repair: Acts of ordinary maintenance that do not include a change in the design, material, form, or outer appearance of a resource, such as repainting. This includes methods of stabilizing and preventing further decay and may incorporate replacement in kind or refurbishment of materials on a building or structure.

Replication: Constructing a building so that it is an exact replica or imitation of an historic architectural style or period.

Restoration: The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Retain: To keep secure and intact. In the guidelines, "retain" and "maintain" describe the act of keeping an element, detail, or structure and continuing the same level of repair to aid in the preservation of elements, sites and structures.

Rhythm: Regular occurrence of elements or features such as spacing between buildings.

Ridge: The line formed where two sloping roof surfaces meet at the top.

Riser: The vertical face of a stair step.

Rubble Stone Masonry: Stonework constructed with rubble stones of irregular size and shape.

Scale: Proportional elements that demonstrate the size, materials, and style of buildings.

Shed Roof: A roof with a single slope, with the rafters spanning from one outside wall to the opposite wall.

Shoe Molding: A molding used next to the floor on an interior baseboard.

Significant: Having particularly important associations within the contexts of architecture, history, and culture.

Sill: The horizontal structural member at the base of a wall, window, or door opening, to which vertical members are attached.

Site: The location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing or ruined, or vanished, where the location itself possesses historic,

cultural, or archaeological value regardless of the value of any existing structure. Examples include: battlefield, campsite, designed landscape, shipwreck, ruins of a building or structure, natural feature, trail, rock carvings, ceremonial site.

Stabilization: The act or process of applying measures to sustain the existing form, integrity, and material of a building or structure, and the existing form and vegetative cover of a site. It may include initial stabilization work, where necessary, as well as ongoing maintenance of the historic building materials.

Stile: The vertical member to which the rails of a door, window or other frame are joined.

Stop: The molding or trim on the inside face of a door or window frame against which the door or window closes.

Streetscape: The distinguishing character of a particular street as created by its width, degree of curvature, paving materials, design of the street furniture, and forms of surrounding buildings.

Structure: The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter. Examples include: bandstand, bridge, canal, corncrib, dam, earthwork, fence, gazebo, grain elevator, highway, irrigation system, lighthouse, railroad grade, silo, trolley car, tunnel, and windmill

Style: A type of architecture distinguished by special characteristics of structure and ornament and often related in time; also a general quality of a distinctive character.

Tread: The horizontal surface of a step.

Vernacular: A regional form or adaptation of an architectural style.

Window Sash: The part of a window frame that holds the glazing, especially when movable; originally always wood, may also be metal, and in late-twentieth century, plastics. (Bucher)

Note: These definitions have been collected from a variety of sources, including the National Park Service, "The Secretary of the Interior's Standards..."; Preservation Virginia's Glossary of Preservation Terms; Illustrated Dictionary of Historic Architecture by Cyril M. Harris; The Penguin Dictionary of Architecture and Landscape Architecture by John Fleming; The Dictionary of Building Preservation edited by Ward Bucher; and Form, Space and Order by D.K. Ching.