100% SUBMITTAL
November, 1995

HISTORIC STRUCTURES REPORT

LACKAWANNA HERITAGE VALLEY TROLLEY MUSEUM

Silk Mill Building
Steamtown National Historic Site

LEUNG HEMMLER CAMAYD, P.C.
305 Linden Street, Scranton, PA 18503

JOHN BOWIE ASSOCIATES
330 West State Street, Media, PA 19063

BORTON-LAWSON ENGINEERING
1460 Sans Souci Parkway, Wilkes-Barre, PA 18702

United States Department of the Interior

NATIONAL PARK SERVICE
Steamtown National Historic Site
150 South Washington Avenue
Scranton, Pennsylvania 18503-2018

IN REPLY REFER TO:
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XH2215

March 22, 1996

Memorandum

To: Manager, Denver Service Center
Attention: Technical Information Center

From: Superintendent, Steamtown National Historic Site

Reference: Historic Structures Report, 100% Submittal, November 1995, Lackawanna Heritage Valley Trolley Museum, Silk Mill Building, Steamtown National Historic Site

Subject: Document for Repository

The above referenced document is attached. It is our understanding that all HSRs relative to NPS structures are to be submitted to the Technical Information Center.

Should you have any questions concerning our submission of this document, please do not hesitate to contact us.

Terry R. Gess

Attachment

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CHAPTER 1: INTRODUCTION

This Historic Structures Report (HSR) is a documentary picture-book that chronicles the intricate evolution of a seemingly simple, yet richly modified, nineteenth century industrial building complex. The Silk Mill Building (its present name) sits on the west side of Cliff Street in downtown Scranton, PA on the west end of Steamtown National Historic Site. The County of Lackawanna and the Lackawanna Heritage Valley Authority (LHVA) propose the creation of a Trolley Museum in this building which will be leased from the National Park Service (NPS). Ultimately, the Trolley Museum will restore and house the East Penn Valley Traction Company's eight trolley car collection and artifacts within this complex.

The present building is actually an amalgamation of four structural bays that began as two separate structures in 1875. Originally, it consisted of a machinery shop building, the southernmost bay (Bay 1) of the building under study, and a pattern shop building, the northernmost bay (Bay 4), both for the Dickson Locomotive Works. In the ensuing years, the complex changed ownership no less than eight times and was used as a silk mill, a truck manufacturing facility, a bakery and various types of warehousing functions. With each successive owner and use, the two buildings were infilled toward one another and were finally connected at an unknown date between 1918 and 1926.

Adaptive reuse of the present complex into a trolley museum will require the complete demolition of the most recently infilled bay (Bay 3), except for its shed roof addition along the west elevation. In its place, a partial infill at the west end of the bay will reestablish the complex to a close representation of its pre-1918 appearance along the east elevation. The east elevations of the new Bay 3 and the existing Bay 4 will be altered to accommodate the inclusion of four new trolley car doors with tracks that enter the building to become the museum's maintenance and restoration shops. The two southern bays (Bays 1 and 2) will become exhibit and administrative space. The remainder of the building will be preserved through restoration of the existing brick masonry bearing walls, heavy timber roof structure, steel and wood windows, and installation of new architectural asphalt shingles over its hip and gable roofs and EPDM on the flat roofs.

The current estimated project budget for this adaptive reuse project is $2.6 million, roughly $1.9 million of which is hard construction cost, and $700 thousand is soft project cost. Funding for the project comes from a combination

of state and local initiatives with the NPS contributing the building under a long term lease arrangement with the LHVA.

Recognition is given to those groups and individuals who have helped in the preparation of this HSR: The Lackawanna Heritage Valley Authority and the County of Lackawanna for initiating the project; the National Park Service for making the building available and providing valuable historical information; the Department of Community Affairs of the Commonwealth of Pennsylvania for securing the funding; the East Penn Valley Traction Company for contributing the trolley car and artifact collection; John Bowie Associates for helping draft and edit the historical components of the HSR; Borton Lawson Associates for assessing the existing structural, mechanical and electrical conditions of the building and making recommendations in its rehabilitation; Synergist, Inc. and Cocciardi & Associates for developing the hazardous materials abatement assessment studies and specifications; and finally the staff of Leung Hemmler Camayd, P.C. for addressing the architectural needs and for bringing the entire document together into a cohesive whole.

CHAPTER 2: HISTORICAL BACKGROUND

NARRATIVE HISTORY

The Dickson Manufacturing Company was established in 1856 under the name of Dickson and Company, with a work force of 37 men in the foundry and machine shop. In their first year, the company contracted with the Delaware and Hudson Canal Company (D&H) to manufacture their stationary steam engines and boilers.[1]

Thomas Dickson, the company's founder, was born in 1824 in Leeds, England, of Scottish parents, and immigrated to Pennsylvania with his parents and two brothers in 1832. The family settled in Carbondale.[2] While in Carbondale, the Dickson brothers established themselves in business, including management of a general store and a foundry. By the mid-1850s, the Delaware and Hudson Canal Company's coal mining operations in and around Carbondale had begun to prosper, and there was great demand for the stationary steam engines produced by the foundry[3] for operating hoists and pumping water.[4]

Although Carbondale was the hub of the Lackawanna Valley in the early decades of the nineteenth century, by mid-century, the Lackawanna Iron and Coal Company, founded by George Scranton, had begun to flourish, establishing Scranton as the economic center of the Valley. Consequently, many entrepreneurs left Carbondale for Scranton to establish new businesses complementary to the iron, railroad, and anthracite coal industries.[5] By this time, the power of steam had been proven, and the presence of the Delaware and Hudson Canal Company had become well-established throughout northeastern Pennsylvania as the primary transporter of coal to New York markets.

These influences prompted Thomas Dickson to organize a group of entrepreneurs, including his brothers, John and George, as well as Charles and Maurice Wurts (developers of the first coal mine in Carbondale), and other local investors, to establish a machinery manufacturing facility which would serve the needs of both the mining and the railroading industries. He persuaded the management of the Lackawanna Iron and Coal Company to sell a portion of their land located in the Pine Brook section of Scranton (currently Penn Avenue, from Mulberry Street to Olive Street).[6]

Ground was broken on January 29, 1856, and the Foundry and Machine Shop were in operation by May 1. During that year, the company obtained a contract with the D&H for the building of engines and boilers for use on the

D&H's new gravity railroad over Moosic Mountain.[7] The Dickson's company withstood the depression of 1857 and enlarged their facilities over the next several years.[8] In 1862, Dickson and Company incorporated under the name of "The Dickson Manufacturing Company," with capital of $150,000.[9]

As a young man, Thomas Dickson had worked as a mule driver with the Delaware & Hudson Company's coal mines at Carbondale. His association with the D&H continued all his life, and he became president of the company in 1869, continuing in that office until 1884.[10] Historically, the Delaware & Hudson Canal Company was the pioneer in the United States in the use of steam-powered locomotives. In 1829, the D&H purchased the "Stourbridge Lion" locomotive from an English company. The history-making first run of this locomotive took place over D&H tracks from Honesdale to Seeleyville, with engineer Horatio Allen at the throttle.[11] In 1830, Allen collaborated with E.L. Miller of the Charleston and Hamburg Railroad in South Carolina on the design of a locomotive which was built in that year by the West Point Foundry in New York. This first locomotive built in America for regular railroad service was named the "Best Friend of Charleston."[12]

By 1860, American railroads had adopted steam locomotives as their primary means of power. The Delaware & Hudson was no exception. As the primary business of the D&H was the mining and shipping of coal, (with 1,600,000 tons sent to market in 1866), efficient transport was essential to the D&H's survival. By 1867, the Delaware & Hudson Railroad operated locomotives over its 32 mile main line from Honesdale to Scranton, and onward, through agreements with the Union Railroad and the Lehigh Valley Railroad, to Philadelphia and New York.[13] Considering Thomas Dickson's life-long association with the Delaware and Hudson, it is not surprising that the Dickson Manufacturing Company became involved in the manufacture of locomotives.

In 1862, the Dickson Manufacturing Company purchased the Cliff Locomotive Works of Scranton from Cooke and Company of New York.[14] At that time, Cooke's Shops had a capacity to produce only 5 locomotives per year.[15]

The Cliff Works site included buildings at the east side of the 200 block of Cliff Street.[16] The Dickson's locomotive division operated under the name of "Dickson Locomotive Works." The company's first commission, the "Lackawanna," an 0-6-0 type narrow gauge (4' 3") locomotive, was built for the Delaware & Hudson in 1862.[17]

The Dickson Locomotive Works never gained the prominence of other locomotive builders such as Baldwin, due to the nature of the Dickson business itself; Dickson limited its production to a line of tough-working utility machines that could stand up to the hard use demanded by the anthracite coal carriers.[18]

In 1864, the company acquired the Kirlin Planing Mill adjacent to the Cliff Works[19] and began manufacturing railroad cars. In that year, 400 men were employed in both divisions of the Dickson company.[20] The planing mill structures were located at the east side of the 300 block of Cliff Street.[21] From the time of their acquisition of the Cliff Works, the Dickson company made improvements and additions to the locomotive shops, and their capacity increased to 4 locomotives per month by 1870.[22]

Approximately one-half of the Dickson's locomotive production was commissioned by the three main railroads which served the Scranton area: the Delaware & Hudson, the New York, Ontario & Western, and the Delaware, Lackawanna and Western.[23] Founded in 1851, the DL&W's main yard and shops, (a portion of which is currently operated by the National Park Service as *Steamtown National Historic Site*), were located in Scranton, south of Lackawanna Avenue from the west side of Cedar Avenue to the east side of Cliff Street. In 1865, the DL&W constructed a Locomotive Repair Shop directly east of the Dickson Locomotive Works. This DL&W building included a Smith and Boiler Shop in one wing and a Machine Shop in another. The engines which drove the machinery were made by the Dickson Manufacturing Company.[24] The historical record appears to imply that the two companies enjoyed a mutually beneficial relationship. The Dickson Manufacturing Company's locomotive catalog for 1885 stated, "A considerable experience in repairing locomotives in this vicinity has given us opportunities to discover the parts most likely to require renewing . . ."[25]

In 1874, a fire heavily damaged the Dickson locomotive erecting shop and destroyed Dickson's other buildings at Cliff Street;[26] however, by 1875, the company had repaired the locomotive shops and rebuilt the car shop. In that year, the company also constructed a Pattern Shop.[27] This new structure was built at the west side of Cliff Street (at 230, the north portion of the building under study). New tools of the most modern design were installed, and the capacity of the shops increased to sixty locomotives per year.[28]

In 1876, the company's capital stock was valued at $800,000; and by 1883, yearly sales from both divisions amounted to more than $1,400,000.[29] The Dickson Manu-

facturing Company entered the 1876 Centennial Exposition in Philadelphia and was awarded a Certificate of Highest Merit and a medal.[30] The Dickson's locomotives were distinguished by well-proportioned clean lines.[31]

By 1889, the company employed 1,200 men with an average monthly payroll of $50,000, and the Cliff Works' annual production stood at 100 locomotives.[32] As a young man, labor leader Terrance Powderly, who later established the United Mine Workers Union, was employed by the Dickson Company and worked on the construction of the "Centennial" engine, among others.

The company marketed several classes of simple, compound, and consolidation type heavy, standard gauge steam-powered locomotives for passenger and freight service; a special line of narrow gauge locomotives for the mining industry and foreign markets; a compressed air locomotive used for transport within coal mining operations; and a line of duplicate parts for locomotive repair.[33] Dickson pioneered in the manufacture of the compressed air locomotive, a market few other locomotive builders solicited.[34]

Railroad tracks "gridironed" the plants, affording efficient receiving and shipping facilities, and the Dickson's machinery and locomotives were transported to all parts of the country.[35] Throughout its operations from 1862 to 1901, the Dickson Locomotive Works produced a total of 1,334 steam-powered locomotives, including the notable 10-wheelers built for the Santa Fe Railway, the 8-wheelers for D&H passenger service, and a long-lived Honduras Railroad locomotive that remained in service until 1962.[36]

Thomas Dickson, who retired as president of the company in 1867, was succeeded by his brother George[37] and then by his son-in-law, Henry Boies, in 1882.[38] The Dickson brothers' success with their manufacturing company achieved a prominent place for the family in the life of Scranton and Lackawanna County. The borough of Dickson City, at the north border of Scranton, was organized in 1875 and named after Thomas Dickson.[39] Thomas Dickson's residence, which stood at the present Masonic Temple location, was a grand residence in Tuscan Villa/Italianate architectural style.[40]

In 1896, after management of the Dickson Manufacturing Company had been in the Dickson family for 40 years, the company was reorganized, with C.H. Zehnder as president. During the 1896-1901 period, the Dickson's new management expanded the company, including construction of a new boiler shop at the east end of the Locomotive Works.[41]

In 1901, the Dickson Manufacturing Company was sold to two outside manufacturing concerns. The Penn Avenue Works, the location of the Dickson's general machinery manufacturing plant, as well as the Dickson's Wilkes-Barre branch, were purchased by the Allis-Chalmers Company.[42] The Dickson Locomotive Works at Cliff Street was acquired by the American Locomotive Company (ALCO)[43] of Schenectady, New York, on June 24, 1901.[44]

The precursor of the American Locomotive Works was founded in 1848 by John Ellis and Platt Potter of Schenectady, along with the Norris brothers of Philadelphia, as the "Schenectady Locomotive Engine Manufactory." However, that company's locomotive designs were too heavy for use by United States railroads of the time, and the company went bankrupt. The business was reorganized by Ellis and Potter in 1851 as the "Schenectady Locomotive Works." During the Civil War, Schenectady supplied over 84 locomotives for the United States Military Railroad. Schenectady also produced the famous 4-4-0 "Jupiter" which figured prominently in the celebration, (the "driving of the final spike"), which signified the completion of the first transcontinental railroad at Promontory Point, Utah.[45]

In 1901, the "American Locomotive Company" was formed by a merger of the Schenectady Locomotive Works with seven other locomotive manufacturers: Brooks Locomotive Works in Dunkirk, New York; Cooke Locomotive & Machine Company in Patterson, New Jersey; Manchester Locomotive Works in New Hampshire; Pittsburgh Locomotive Works; Richmond Locomotive Works in Virginia; Rhode Island Locomotive Works in Providence, Rhode Island; and the Dickson Manufacturing Company Locomotive Works in Scranton. The Montreal Works in Canada and the Rogers Locomotive Works (one of the oldest locomotive manufacturers in the nation, founded in 1837) in Patterson, New Jersey, were acquired in 1905.[46]

Production at the Cliff Street locomotive shops under ALCO management began in April of 1902.[47] By 1904, the American Locomotive Company doubled the capacity of its Scranton Shops and employed 1,000 men. During the 1901-1904 time period, the shops turned out heavy locomotives used on the Delaware, Lackawanna and Western Railroad and on the Delaware and Hudson Railroad, as well as stationary engines for the coal mining industry.[48]

Later in the decade, as the railway freight business increased, the railroad companies demanded larger and heavier locomotives to handle longer strings of cars and heavier loads. Due to the height limitations of the Cliff

Street shops, after 1904 ALCO confined its Scranton division to the manufacture of light freight locomotives, small passenger locomotives, and specialized mining industry locomotives. After building 428 locomotives, ALCO closed its Scranton Shops in April, 1909.[49] By 1911, the American Locomotive Company had completely vacated the Scranton Locomotive Shops.[50] Records of locomotives built at the Cliff Works were removed to ALCO's main plant at Schenectady (the city of their present location, in the archives of the Mohawk and Hudson Chapter of the National Railway Historical Society, under arrangement with the American Locomotive Company Historical Society).[51]

Later ALCO production included the 4-8-8-4 Union Pacific "Big Boy;" however, that was not until the 1940s, thirty years after the company had left Scranton. ALCO also produced electric locomotives in partnership with General Electric. In 1965 the company's assets were purchased by Studebaker-Worthington, and the Schenectady plant was closed and subsequently leased to General Electric for turbine production. The only ALCO plant still in operation, now a subsidiary of a British company, at Auburn, New York, manufactures parts to support ALCO locomotives still in operation.[52]

OWNERSHIP/TENANT HISTORY

Locomotive / Machine Shop Manufacturing Facilities:

The building at 230-232 Cliff Street was originally two separate structures at the west side of the 200 block of Cliff Street.[53] As noted in the Historical Background section, these buildings were constructed in 1875-1876, during the time of reconstruction of the Dickson Manufacturing Company Locomotive Works following the fire of 1874.

During the time of ALCO ownership, from 1901 through 1909, the two buildings were used for storage, with main production occurring in the erecting shops at the east side of Cliff Street. After ALCO ceased production in Scranton, the buildings stood vacant while new tenants were solicited by the Central Realty Company of Scranton.[54]

Truck Manufacturing Facility:

The building at 232 Cliff Street remained vacant for several years. In 1914, the Maccar Truck Company moved into the building and motor truck manufacturing began in 1915.[55] Maccar Truck Company was established in Allentown by John Mack and Roland Carr. The Scranton plant was managed in 1915 by William Gardner and Lawrence Connell, sons of prominent Scranton families.[56]

The Maccar Truck Company remained at the Cliff Street location for only three years (1914-1917) until moving to a larger facility on Providence Road.[57] Worthington Scranton, (father of Pennsylvania Governor William W. Scranton and grandson of Joseph H. Scranton, one of the developers of the Lackawanna Iron and Coal Company), served as vice-president of this company from 1925 to 1930. The Scranton manufacturing plant of the Maccar Truck Company went out of business in 1934.[58] The remnant of the Maccar Truck Company moved to Allentown after 1935 and was purchased by Selden Hahn.

Silk Mill Facilities:

In 1912, the Scranton Silk Company moved into the north building at 230 Cliff Street.[59] Manufacture of silk was a prominent industry in Scranton from 1872 until World War II. Beginning in the 1840s, immigration of families to the Lackawanna Valley reached huge proportions due to the demand for mining industry workers. By the 1870s, the Valley offered a large pool of female labor as the wives and daughters of the mine workers sought employment. Alfred Harvey of Connecticut came to Scranton in 1872 as superintendent of the Scranton Silk Company, managing the plant which was the precursor of the largest silk mill in the region, the Sauquoit Silk Mill, located in Scranton's

south side. Harvey's first silk mill venture was not successful, and after that mill was sold to Sauquoit, he operated silk mills at other Scranton locations.[60]

By the early decades of the twentieth century, the production of silk thread and cloth was Scranton's second largest industry, behind coal mining. The Scranton Silk Company began operations at Cliff Street in 1913 and continued until 1920,[61] when the company built a new mill on South Washington Avenue.[62]

After Scranton Silk Company relocated, the neighboring silk company, United Silk Mills, operated from both buildings for a few months until 230 Cliff Street was purchased by the Williams Baking Company in late 1920 or early 1921 for use as a warehouse.[63]

The building at 232 Cliff Street had been purchased by the United Silk Mills in 1918 (after the Maccar Truck Company moved to a new location). United Silk Mills operated from this building from 1918 through 1929, when the company went into receivership. Plant operations continued, however, under the ownership of the Lackawanna Bank and Trust Company until 1936.[64] The business ended due to a combination of hard economic times caused by the Great Depression as well as decreased demand for silk due to the development of synthetic fibers.

Ice Cream and Bakery Operations:

As early as 1898, the Williams Ice Cream Company occupied a former Dickson Manufacturing Company building, the building at 307 Cliff Street,[65] the former Tank Shop[66] (the southeasterly building at the east side of the street). Sometime between 1884 and 1898, the Dickson Company had vacated the original Tank Shop and erected a larger building directly behind it (to the east).[67] (When the American Locomotive Company vacated the site, Sall Mountain Roofing and Asbestos Materials occupied this newer structure until circa 1935, when it was acquired by the Williams Baking Company.) In 1920-1921, Williams expanded its line of foodstuffs to include bakery items[68] and acquired the vacant Scranton Silk Company building at 230 Cliff Street,[69] (the former Dickson Pattern/Woodworking Shop).[70] After the United Silk Mills vacated the adjacent building at 232 Cliff Street in 1936, this building was also acquired by the Williams company.[71]

Williams Baking Company was founded as the J.D. Williams Company in 1867 by Joshua Williams of Jermyn, Pennsylvania. The first plant, on Lackawanna Avenue in Scranton, produced ice cream and candy. Throughout its early years, the company, which was the city's first

wholesale ice cream manufacturer, moved several times to different Scranton locations before finally acquiring the buildings at Cliff Street. The company was originally a family-owned business, but in 1912 outside stockholders, under the name Northeast Industries, Inc., acquired controlling interest. It was approximately at that time that retail baked goods were added to the company's line and the plant was expanded. Later, in 1952, Gerard R. Williams, grandson of the founder, acquired full control of the company through purchase of stock. Gerard, the company's president until his death in 1958, and his son, Wayne P. Williams, consolidated the bakery's operations into the building at the east side of the street (307 Cliff Street) in 1956.[72] At that time, the Williams Baking Company vacated the 230-232 Cliff Street building.[73]

Wayne P. Williams became president of the company upon his father's death in 1958. He was also chairman of the board of the Mark Truck Rental Corporation,[74] a company that occupied one of the former Dickson buildings during the time period 1959-1967[75] at the east side of Cliff Street.

The Williams Ice Cream Company and the Williams Baking Company occupied the 230-232 Cliff Street buildings from 1921 (230 Cliff Street) and 1936 (232 Cliff Street) until 1956[76] making a number of alterations and renovations.[77]

Some time between 1918 and 1936, the two buildings at 230 and 232 Cliff Street were joined as one by a brick addition between them. Although previous researchers have placed the date of this addition at 1926[78], an exact date cannot be conclusively determined. Although the Williams company did obtain a building permit in 1926 for an addition,[79] it is not clear that this permit was for the addition between the 230 - 232 Cliff Street buildings, since a silk mill occupied the 232 Cliff Street building until 1936.[80] One can only conjecture that the addition may have taken place during the 1918-1921 period, when both buildings were used as silk mills,[81] or about 1936, when the Williams Baking Company acquired the second building.[82]

After Gerard R. Williams reacquired controlling interest in the Williams Baking Company in 1952, the bakery operations were modernized in 1956.[83] With production consolidated into the building at 307 Cliff Street (at the east side of the street), the Williams Baking Company no longer needed the structure at 230-232 Cliff Street, so it was sold to the Scranton Dry Goods Company for use as a warehouse.[84]

Warehousing Facilities:

The Scranton Dry Goods Company purchased the (now single) structure at 230-232 Cliff Street in 1956 for use as a furniture warehouse. (Scranton Dry was Scranton's oldest department store, founded in 1892 as the Jonas Long's Sons store. The store, under various ownership, including Scranton's prominent Oppenheim family, stayed in business until 1979. The former department store, now an office building and still one of Scranton's architectural landmarks, is located at the northeast corner of Lackawanna and Wyoming Avenues.)

The Scranton Dry Goods Company used the 230-232 Cliff Street structure as a furniture warehouse until 1979. It was then purchased by Blatt's Furniture for the same purpose. Blatt's Furniture vacated the structure in 1988, and it was acquired by Laminations, Incorporated (a recycler and manufacturer of plastics products). Laminations had earlier purchased the buildings on the east side of Cliff Street, at 307 and 231-233, for their offices and recycling operations. The building at 230-232 Cliff street was used by Laminations as a storage building to hold the "overflow" of recyclable materials.[85]

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[72] Walsh, B-8.

[73] _____, Insurance Maps of Scranton, Pennsylvania, Vol. 1-A, (New York: Sanborn Map Co., 1956), plate 15A.

[74] Walsh, B-8.

[75] Scranton City Directories, 1958-68.

[76] Scranton City Directories, 1958-68; Sanborn, 1956, plate 15A.

[77] _____, City of Scranton Building Permits, City Hall, Scranton, Pennsylvania, Nos. 19821, 19822 and H456.

[78] Clemensen, 103.

[79] Scranton Building Permits, Nos. 19821 and 19822.

[80] Scranton City Directories, 1918-36.

[81] Scranton City Directories, 1917-38.

[82] Scranton City Directories, 1936-38.

[83] Walsh, B-8.

[84] Scranton City Directories, 1953-68; Sanborn, 1956, plate 15A.

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REPOSITORIES

American Locomotive Company Historical Society
P.O. Box 655
Schenectady, NY 12301

Anthracite Heritage Museum of Pennsylvania
R.D. #1, Bald Mountain Road
Scranton, PA 18504

Carbondale Historical Society
Carbondale City Hall
1 Main Street
Carbondale, PA 18407

National Railway Historical Society
Delaware & Hudson Chapter
Carbondale City Hall
1 Main Street
Carbondale, PA 18407

Hagley Museum and Library
P.O. Box 3630
Wilmington, DE 19807

Lackawanna Historical Society
The George H. Catlin Memorial House
232 Monroe Avenue
Scranton, PA 18510

National Railway Historical Society
Mohawk & Hudson Chapter
P.O. Box 523
Schenectady, NY 12301

Railroad Museum of Pennsylvania
P.O. Box 15
Strasberg, PA 17579

Steamtown National Historic Site
105 South Washington Avenue
Scranton, PA 18505

CHAPTER 3: PHYSICAL HISTORY

Introduction: Much change and adaptive reuse has taken place along Cliff Street over the past century. Buildings have been constructed, and then altered, added to, taken from, and, ultimately, consolidated into the present-day configuration seen on the site. For the purposes of this analysis, several nomenclatural standards shall be set herewith. First, the building now known as 232 Cliff Street (the southernmost in the complex) shall be called Bay 1. Second, the building now known as 230 Cliff Street (the northernmost in the complex) shall be called Bay 4. Bays 2 and 3 are the two infill sections between them. This clarification is necessary because of the amount of change and alteration recorded since the initial construction of the buildings.

Episode 1 - New Building After the 1874 Fire: The story begins after the 1874 fire which devastated much of the Dickson manufacturing complex at Cliff Street. Within one year, the site was reconstructed to include a Machine Shop in what is now the Bay 1 building, and a new Pattern Shop in what is now the Bay 4 building. The 1877 C.M. Hopkins *City Atlas* (see Figure 3.1) clearly shows the two buildings with their uses. Interestingly, the map also mentions the Office on the east end of the Pattern Shop building; it does not reveal the height of the building; however, the obvious lack of butt joints or signs of alteration to the north wall suggest that the second story and the prominent brick parapet were original to the building (see Figure 3.2).

The 1877 Hopkins *City Atlas* shows a Boiler House in the area now occupied by Bay 2; since the map does not label any other buildings in the Dickson complex as a boiler house, it is probably reasonable to conclude that this structure was the sole source of steam for the entire complex. The 1877 Hopkins *City Atlas* also shows the locations of railroad tracks that served the two buildings; the first was a spur that passed between the large Locomotive Machine Shop and the Car House (both buildings were on the east side of Cliff Street) which probably brought coal to the Boiler House. The second track passed through the Planing Mill & Car Shop buildings (also on the east side of Cliff Street), and contained sidings into the Machine Shop (Bay 1), as well as spurs into the open spaces between the Machine Shop and Pattern Shop (Bay 4). Cars and equipment needing repair were brought into the Machine Shop through a large door on the east side (now partially bricked up), and it is reasonable to assume that the two spurs between the buildings were simply used for temporary storage (see Figure 3.3).

It is interesting to compare the architectural designs of the Machine Shop (Bay 1) and Pattern Shop (Bay 4) in their original forms. Aside from the two story Office portion of the Pattern Shop with its six windows on the first and second floors, they appear to be similar; the color and layment of the brick is similar, and they have identical widths and lengths (see Figure 3.4). In addition, the window sizing, configurations, and spacings are similar. Finally, both buildings contain a large, brick-arched door opening - the Pattern Shop, in the center of its south wall, and the Machine Shop in the center of its north wall - and both openings faced each other (see Figures 3.5 and 3.6). This suggests that the space between the two buildings was either used for storage (perhaps in conjunction with the rail siding), or that a lot of materials were passed between the buildings.

Episode 2 - Addition of the Tool Room by 1884:

According to the April 1884 *Sanborn Map*, a one story brick tool room, roughly 40' square in plan, has been added onto the north wall of the Machine Shop (Bay 1). It was positioned to enclose the large door opening on the north wall of the Machine Shop but it apparently had no doors. However, it did contain three windows on the east and west elevations and two on the north side. This is corroborated in the physical evidence, which remains intact and reveals that the designer and builder consciously matched the windows, cornice, and walls so that the building would look unified (see Figures 3.6 and 3.7).

The April 1884 *Sanborn Map* also reveals that the Boiler House was constructed of brick (which is not surprising), was one story in height, contained three windows on the east and west sides, and had a draft stack in its southeast corner, close to the northwest corner of the Machine Shop. The Pattern Shop (Bay 4) is now called a Wood Working Shop, which suggests that its occupants were doing more than simply making patterns for casting. Interestingly, the Machine Shop (Bay 1) and the Wood Working Shop (Bay 4) each contained their own engine, presumably steam, which undoubtedly powered the machines in the buildings.[1] Finally, the buildings were heated by steam (although no evidence of any original radiator systems survive) and contained electric lights.

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[1] If the Machine Shop were laid out like a typical machine shop of the period, it would contain a horizontal, ceiling-mounted shaft that would drive the various milling machines, drill presses, shears, boring lathes, wheel lathes, gear cutting machines, grinders, and other machines required for routine car maintenance and repair. If the Wood Working Shop were laid out like a typical pattern shop of the era, it would contain a horizontal, ceiling-mounted line shaft that would drive the various table saws, band saws, drills, sanders, planers, jointers, and other machines required for patternmaking.

There are no railroad tracks shown in the vicinity of the Machine Shop or Wood Working Shop in the 1884 *Sanborn Map*, even though tracks are shown adjacent to the Coal Dumpers and Car House to the east of Cliff Street. It would be unreasonable to assume that the coal for the Boiler House might have been brought in through any means other than existing track; therefore, it can be assumed that at least that track was intact, albeit not shown on the drawing.

By 1888, an addition was installed onto the north side of the Wood Working Shop (Bay 4). The ghost of this addition is evident at present on the building; it was one story with a gable roof (see Figure 3.8). However, there was no direct communication between the addition and the Office of the Wood Working Shop. The 1888 *Atlas of the City of Scranton* shows the addition, and indicates that it is roughly 100 feet in length; unfortunately, it does not reveal the use of the addition (see Figure 3.9). The drawing shows the Tool Shop and Boiler House; it also shows a single track between the Tool Shop and Wood Working Shop (which was shown in the 1877 *City Atlas* but omitted from the 1884 *Sanborn Map*). The track contains a siding, but more importantly, the drawing does not show the set of tracks, which had come onto the site from the Planing and Car Shop, on the east side of Cliff Street. Evidently they were removed after 1877, but before 1888.

Episode 3 - Infill of Bay 2, Ca. 1898:

Two maps provide conflicting information on the buildings along Cliff Street. First, an 1898 *Atlas of the City of Scranton* does not show much change in the buildings (see Figure 3.10). The addition to the north of the Wood Working Shop is shown attached to the adjacent building to the north, which houses the Economy Heat & Power Company. There is also shown another addition, of equal size, which attaches to the west side of the first addition and the south side of the adjacent Economy Heat & Power Company building. However, aside from these minor changes, there is no difference between the 1888 *Atlas* and the 1898 *Atlas*.

The second 1898 map, a Sanborn-Perris *Insurance Map of Scranton*, shows some similarities with the 1898 *Atlas*; but it also shows some striking differences (see Figure 3.11). Most notably, the Machine Shop (Bay 1) and Wood Working Shop (Bay 4) are now vacant, and the sides of the Tool Room (which comprises all of what is now called Bay 2) are now filled in - a one story addition is on the east side, facing Cliff Street, and a three story addition, with an electric elevator, is on the west side, facing the Lackawanna River. Interestingly, the 1898 Sanborn-Perris map indicates that the three portions of Bay 2 are occupied by the Wall Plaster Works. All building sections in Bays 1, 2, and 4 are covered with noncombustible roof materials (either slate shingles or metal). The physical features of the building not only confirm this, but also reveal that the

design of the windows, cornice, and the roof of Bay 2 match the adjacent Bays 1 and 4. The two railroad tracks, which ran into the vacant area between Bays 2 and 4, are still in place.

The 1898 Sanborn-Perris map reveals several inconsistencies on the north side of Bay 4, which faces the Economy Heat, Light & Power Company (the property to the north). In this map, the one story addition, which attaches to the north side of Bay 4, is only shown to be roughly 20 feet long (instead of the much longer length shown in previous maps), and the addition, to which it was previously shown attached, is labeled as a two story lumber shed. However, there is an interesting one story shed, roughly 20 feet wide, by 60 feet long, that was used by a paper chair seat manufactory, and was attached to the western portion of the north elevation of Bay 4.

One additional interesting feature found in the 1898 Sanborn-Perris map is the retaining wall on the west side of the building; it curves around, following the Delaware & Hudson railroad tracks, and runs from south of Bay 1 to the north of Bay 4. The map does not reveal the construction material of the wall, but it is reasonable to assume that it was stone.

The contrasts between the 1898 *Atlas* and the 1898 Sanborn-Perris map are rather striking; however, they can be reconciled if it is assumed that the field data for the 1898 *Atlas* was gathered a year or two (or even more) in advance, and that 1898 was simply the compilation and publication date for that document. If this assumption were made, then it might be possible to conclude that the period circa 1896-1898 was a time of great change for this neighborhood, and that one map documented the condition just before the change and the other just after.

Episode 4 - Silk Companies' Interlude After 1918:

By 1918, Central Realty owned both buildings, and had leased the Bay 4 building to the Scranton Silk Company. The 1918 *Atlas of the City of Scranton* shows this information; and it does not list any tenants occupying the building at Bays 1 or 2 (see Figure 3.12).[2] The one story addition on the eastern portion of the north side of Bay 4 is expanded, and abuts the two story addition on the south side of the adjacent property (which is now listed as the Scranton Electric Company). Cliff Street (now called Cliff Avenue) has been placed into the concrete underpass be-

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[2] In 1914, the Macar Truck Company leased the former Machine Shop and additions (Bays 1 and 2) and began the manufacture of truck motors. That use for the building was short-lived; by 1918, the company moved out and relocated to a larger facility elsewhere in Scranton. (See Chapter 2 of this report for narrative details relating to Maccar's occupancy of the building.)

neath the throat of the railroad yard, and a rail siding has been installed just to the north of the Scranton Silk Company building (Bay 4); it is possible that the siding could be used for deliveries either at the silk company or the electric company.

When United Silk Mills acquired the building at Bays 1 and 2 in 1918, they painted the company name across the west side of the third story room in Bay 2 (see Figure 3.13). However, it was only for a short period of time that United Silk Mills and Scranton Silk Company were neighbors; in 1920, Scranton Silk Company built a new plant on South Washington Avenue and, once it was completed, moved their operation from rented space into wholly owned space. Once the Bay 4 buildings was vacated, United Silk Mills expanded their operations into it. At some time during the next several years, during the mid-1920's, the space between the buildings, known as Bay 3, was enclosed, probably for additional secure storage (see Figure 3.14).[3]

United Silk Mills went into the receivership of the Lackawanna Bank and Trust Company in 1929, but continued to operate on site until 1936. At that time, they closed down and the building was sold to the Williams Baking Company. Williams had bought the northern part of the building (Bays 3 and 4) in 1925 and had begun using it for storage as United Silk Mills space for inventory needs decreased. After the south part (Bays 1 and 2) was sold to Williams, they had control of the entire building, to complement the buildings across Cliff Street that they already owned.

Episode 5 - Williams Bakery Uses Building for Storage after 1936:

After the Williams Baking Company took over the building, they modified it to accommodate short-term daily storage and loading of baked goods onto vehicles. They lowered the floor areas in the eastern portion of Bays 1, 2, and 3, and created a loading dock roughly 40 feet inside the east wall of the building. They also installed a steel girder and beam system in this area to clear-span the space and free it of columns. In addition, they added large vehicular roll-up doors on the south and east sides of the building, to permit truck entry on one side and exiting on the other. In addition, they added a wooden partition, which was placed adjacent to the leading dock. This wood partition contained twelve locking rooms behind it, and above the door on each room was placed a card with the drivers' routes and route numbers. One which was clearly discernible said: Route 7 - Dickson City, Olyphant, Lower Throop, Priceburg, Throop, and Underwood (see Figure 3.15).

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[3] Unfortunately, records do not indicate exactly when Bay 3 was constructed. See Chapter 2 of this report for a narrative account of the various changes in ownership of the buildings.

Evidently, these locking rooms were where the breads and baked goods were placed the night before, and each driver had a designated door and place on the leading dock to which he was assigned.

Little else changed in the building for the next twenty years while Williams owned it. However, in 1956, when the ownership of the company changed, the baking operations were modernized and the building at 230-232 Cliff Street was no longer needed. At that time, it was sold to the Scranton Dry Goods Company.

Episode 6 - Furniture Warehouse after 1956:

Shortly after Scranton Dry Goods bought the building, they installed a large mezzanine throughout Bays 1 and 2, to increase their storage capability (see Figure 3.16). They installed a ramp adjacent to the former west wall of the Tool Room in Bay 2, so as to provide access for large carts and dollies up to the mezzanine (see Figure 3.17). Aside from that, however, very little was done to the building.

In 1979, the building was sold to the Blatt Furniture Company, and they, in turn, used the building for the same purpose. In 1988, Blatt sold the building to Laminations, Inc., who has used the building for storage.

CHAPTER 4: EXISTING CONDITIONS

INTRODUCTION

The existing brick building contains a heavy timber frame roof and its main portion can be defined by four separate bays, each 140'-2" long. Bay 1 runs east to west at the south end of the building and is approximately 48'-6" wide. Bay 2 is north of Bay 1 and is 39' wide. Bays 3 and 4 are defined similarly and are 44'-6" and 51' wide, respectively. A lean-to structure, 15'-0" wide, is attached to the west end of Bays 1, 2, and 3. Also, on the north side of Bay 4, a concrete masonry unit (CMU) enclosed exterior loading dock is 24'-0" x 25'-10" in size.

STRUCTURAL AND ARCHITECTURAL SYSTEMS

Foundations and Exterior Walls

The foundations of Bays 1, 2 and 4 were built of semi-dressed gray sandstone with pointed mortar joints and a cut stone cap between the brick above and stone below. At this time, they are in relatively sound condition and show no major deterioration except for minor surface scaling on exterior surfaces and loss of mortar in exposed areas along the south elevation of Bay 1.

The exterior load bearing brick masonry walls exhibit varying degrees of deterioration, depending upon their particular orientation to the prevailing weather patterns. Beginning on the east elevation, the lower portions of all four bays show minor signs of mortar joint deterioration along with spalling, broken and/or missing brick. The infill brick at Bay 3 is conspicuously different in texture and color from the three other bays, the result of later construction. There are also numerous structural stress cracks between the first and second floor windows of Bay 4. Also, all four bays show clear signs of alterations made over time to the masonry openings, as demonstrated by the variety in color and texture of brick used for these changes. See Figure 3.4.

Along the south elevation of Bay 1, minor signs of mortar joint deterioration include broken, spalling brick and five 8"x16" holes in the brick along the top of the stone water course. Again, there are signs of alteration to this facade over time, as seen by the variety of brick color and texture used in the infill area of the southeast corner.

The west elevation, with its numerous one story shed roof additions, shows the greatest amount of masonry deterioration, due to its exposure and most likely inferior

quality of brick. The entire lower area of this elevation displays severe joint deterioration, spalling, broken and missing brick. In some areas, there are two and three wythes of brick missing along the base courses of the west wall. Also, there are structural stress cracks in three of the flat arch window heads.

The brick walls of the third floor area above the west end of Bay 2 also show signs of joint deterioration; in addition, this portion of the building contains some brick spalling along the bottom coursing at the lower roofs on all of its four elevations. See Figure 3.13.

The west and east sides of the parapet wall between the eastern two story area of Bay 4 and its western 1-1/2 story area are in poor condition with severe joint deterioration and spalling, broken and missing brick. The top of the parapet wall is a rowlock brick coping showing minor signs of deterioration. See Figures 3.2, 3.8 and 3.14.

The upper and lower courses of brick in the draft stack at the western end of Bay 3 show signs of deep joint deterioration while the remaining middle areas of the stack are in good condition. See Figure 3.13.

Like the west elevation, the north wall also shows severe joint deterioration along the lower brick courses. Except for the CMU addition at mid-elevation there are no signs of alterations to the masonry openings of this elevation. The CMU addition is in good condition and shows no signs of deterioration or failure.

Cornices, Gutters and Downspouts

The cornices of Bays 1, 2 and 4 are 24" high and three tiered stepped brick; with only minor signs of deterioration, thanks to the typical 18" wide roof eave overhang. Rainwater gutters or downspouts do not appear to have been installed on the building, helping to explain the extensive mortar joint deterioration at the lower brick courses around the perimeter of the building.

Currently, the wood fascia boards and/or metal edge flashings along the roof eave perimeter of Bays 1, 2 and 4, including the eaves of the third floor story, are severely deteriorated or missing altogether. There has been some spot fascia repair work along the west edge of Bay 1 and three edges of the two story area of Bay 4. The east wall of Bay 3 has a terra cotta tile coping that is in good condition. See Figure 3.14.

Roof Structure, Sheathing and Covering

The roof in Bays 1, 2 and 4 is supported on purlins and custom timber Howe trusses. The trusses are supported on brick columns. Roof height is multi-level, with 6:12 hip roof construction in most areas and a gabled roof for the high trusses on the west end of Bay 2. Framing on the east end of Bay 2 is variable with trusses rotated 90 degrees in one area. Trusses supporting the hipped portion of the roofs are modified Howe type to accommodate the hip geometry. In Bay 4, no trusses are used for the high roof on the east end. Here, heavy timber hip framing is supported by brick walls.

The east ends of Bays 1 and 2 have been modified by the addition of an interior loading dock area. In this area, roof trusses are supported by 30' long steel girders on steel columns. Also, in Bays 1 and 4, skylights have been inserted on the south side of the roof.

The flat roof in Bay 3 is supported on wood joists and heavy steel girders. The girders are supported by posts and beams at the center of the bay and by the brick walls on each end. This portion of the building was constructed some time after Bays 1, 2 and 4. The east end of this bay has also been modified with steel beams supporting a 30' wide clear span of the former loading dock area.

Wood rafters spaced at 24" frame the roof of the lean-to addition on the west end of Bays 1, 2 and 3. The CMU enclosed exterior loading dock is framed with steel joists and metal deck on CMU walls.

Because of exposure to weather, there is some deterioration of the structure. The roofing in Bays 1, 3, and 4 is leaking, and daylight is visible through some deck areas. Rot is evident in portions of some truss chords and purlins. The skylights are in poor condition, with rotted curbs, failed flashings and broken glazing. The roof leaks in Bay 3 have also caused rotting of the floor deck in several areas. Over the boiler room, the steel floor beams are rusted and exfoliated due to high humidity.

While the majority of the existing asphalt shingle roofing atop the hipped and gabled sloped roofs of Bays 1, 2 and 4 is in good condition, there are areas on the south slope of Bay 1 that have no shingle, mineral roll roofing or underlayment protection. Consequently, roughly 25% of the 2x6 wood deck shows severe deterioration allowing infiltration of rain and weather into the building in Bay 1.

The roll roofing and flashings atop the flat roof of Bay 3 have failed extensively, allowing infiltration of the weather into this area of the building. The shed roofs along the west elevation of the building have roll roofing and metal flashing that is in poor condition, allowing limited infiltration of the elements.

Exterior Doors

In general, the existing exterior doors and frames are hollow metal. One is located on the east elevation of Bay 2; another is in the east elevation of the CMU addition to Bay 4. These doors are obvious recent additions. Two wood doors and frames in the lean-to additions on the west side of the building are in poor condition. The building contains four overhead roll-up metal doors, the type used at loading docks. These also were later alterations in the south wall of Bay 1 and the east wall of Bay 3. There are also two in the north and east elevations of the CMU addition to Bay 4. All four are in poor operating condition.

As alterations to the masonry openings were made to the original building in Bays 1, 2 and 3 the original architectural integrity of these openings was compromised. Window frames were removed, masonry openings enlarged or downsized, and new lintels installed below flat arch headers and/or bricked-in to accommodate the immediate functional requirements of the then current owner/operator of the building.

Windows

The windows reveal the history of the building through the variety of types and configurations. Particularly along the east elevation of the building, three basic types of window units were used in the four bays. These being a flat head steel pivoting unit set within a segmented arched masonry opening, a flat head steel pivoting unit, and an operable double hung wood unit. Also, several original flat arch head masonry window openings were modified to accommodate on-going internal functional adaptations.

The segmented arched opening units with their 12 and 24 light patterns and 6 and 8 light pivoting operating sections appear to be later adaptations to the original sections of Bays 1, 2 and 4 and are confined to the first floor. Most of the interior portions of these window openings have been infilled with CMUs. At present, these windows have wired translucent glazing. The steel frames, sash and sills of these units are in fair to good condition. There are limited broken or missing panes of glass in these units.

Curiously, the second floor masonry openings of Bays 2 and 4 contain wood double hung windows, which suggests that the steel windows of the first floor are later alterations. See Figure 3.14. The flat arch head types appear in the perimeter walls of Bays 1, 2 and 4, while the flat head type are confined to east elevation of Bays 2 and 3 where clear signs that the original flat arch masonry openings were changed to accommodate flat head window units are visible. The east elevations of Bays 1 and 2 contain later alterations, but with a slight variation - two/three flat head steel units tied together with steel mullions to form larger masonry openings. See Figure 3.3. The units in the masonry openings along the south, west and north

elevations of the building are the flat arch head type pivoting steel units.

There are signs of some later adaptations at the three south units of the second floor area of Bay 4. The original flat arch masonry openings have been altered to accommodate the only flat head steel pivoting units on the second floor levels. See Figure 3.14.

The remaining second floor units in the two story block on the east end of Bay 4 and the west end of Bay 2 are typical wood double hung units with either a 6/6 light pattern in Bay 4 and a 25/25 light pattern in Bay 2. The wood sash in all these units are in poor condition with numerous broken or missing clear glazing, but the frames are in good condition, as are the steel-clad sills

Miscellaneous Exterior Details

A noteworthy feature on the west elevation of the second floor room at the west end of Bay 2 is a faded, painted sign on the gabled wall area depicting "United Silk Mills," one of the building's former owners. See Figure 3.13.

INTERIOR FLOOR FRAMING, WALLS, FINISHES, AND EQUIPMENT

The finished floor in Bays 1, 2, and 3 is wood plank over brick piers and wood beams, with a concrete slab on grade below the wood floor in Bays 1 and 2. In Bay 3, the floor is supported on wood beams over a dirt crawl space. The east end of all three bays has been modified for the interior loading dock, with a concrete slab approximately 22" below the wood flooring. This floor is sloped to drains in the center of the area.

The finished floor in Bay 4 is concrete slab on grade at the level of the wood floor in Bays 1-3. An exception is the east end of the bay, which contains a basement. The basement space is 21'-0" x 47'-0" x 8'-0" high with exposed sandstone foundation walls, heavy timber beams and plank ceiling. Incorporated into the northwest corner of this area is a 14'-0" x 17'-0" two story high (26'-0") cast in place concrete vault with 2'-0" thick walls and 1'-0" thick floors and top cap. The vault is accessed via two heavy steel plate doors, one directly above the other on the two floors.

The floor in the lean-to area is slab-on-grade except for the north end, which houses a coal-fired boiler. This area of the floor is concrete over steel beams.

A mezzanine level at 9'-10" above first floor level was added inside the structure in Bays 1 and 2. This framing is composed of 3x12 wood joists at 16" centers spanning to steel beams. These beams are supported by wood posts, independent of the brick columns supporting the roof trusses above. See Figure 3.16. A ramp up to this level starts in Bay 3 and finishes in Bay 2. See Figure 3.17.

Bay 4 also has a small mezzanine area of approximately 28' x 12' at the level of the bottom chords of the truss. This area is adjacent to the office area on the east end of the building. Floor framing is supported by the brick wall on one end and by the bottom chord of the roof truss at the other end.

The west end of Bay 2 contains a second floor level approximately 19 feet above the first floor level. The second floor is composed of wood plank flooring over heavy wood beams at 6' centers. The floor area is approximately 28' x 56'. A second floor also exists on the east end of Bay 4. This area was used as an office, and both the first and second floors contain the cast-in-place concrete vault. Other portions of the floor are framed in wood to the brick bearing walls. This floor area is 47'-6" x 21'-9" and is 12'-4" above first floor level.

The result of this additive architectural history of the building complex is a Parenesian world, brought to light when entering the building. What were once exterior walls of Bays 1, 2 and 4 are now interior bearing walls that clearly demarcate each of the four bays.

Like the exterior walls, the interior north walls of Bays 1 and 2 and the south wall of Bay 4 have the typical flat arch head masonry openings in the double group configuration. There are also two larger full arched masonry openings directly opposite each other in the mid-span north wall of Bay 1 and south wall of Bay 4. See Figures 3.5 and 3.6. These were possibly loading dock door openings at one time when the two bays were separate and distinct buildings. Six of the wood double hung windows with sash and frames remain in the west end of the north wall of Bay 2, while seven frames remain in the window openings in the west end of the south wall of Bay 4, (with the exception of two extant 3x4 steel pivoting window units in the far east end of this wall).

Between the lower concrete slab floor running north-south at the east end of Bays 1, 2 and 3 and the 22" high raised wood plank floor in the remaining west end of these bays, a classically inspired, horizontally beaded, 1" x 6" tongue and groove, wood board partition with sliding loading dock doors and square window openings is positioned at the mezzanine level behind. The partition is in good condition, as are the remaining doors and their hardware. See Figure 3.15.

In the southwest corner of Bay 2 is a 6'-0" x 6'-0" open cage, two stop freight elevator that serves the mezzanine and upper second story room. It is not in operating condition but still retains all its motors, cables and parts.

MECHANICAL SYSTEMS

Space Heating: Remnants of a variety of heating systems remain in the facility, but we were unable to establish which, if any, of these are actually part of the original system.

There is an abandoned steam boiler, which is in very poor condition and covered with what appears to be asbestos-containing material. It fed steam throughout the facility by way of a 6" main rise and remote header. From the header, five smaller pipes supplied steam to a variety of terminal heating elements.

Taking the terminal heating elements in chronological order, within the facility can be found:

* Twenty-five feet of steel pipe heating coils arranged in a twelve-row configuration.
* Sixty feet of vertically-oriented single-row cast iron radiators.
* Four vertical steam unit heaters with a circular configuration.
* One vertical steam unit heater with a square configuration.
* One vertical gas-fired unit heater.

There is a Simplex condensate pumping unit located in the loading dock area. Its condition and operational status are unknown.

Of all this equipment, only the square unit heater and the condensate pumping unit appear to be in working order, although we found no other boiler in those areas of the facility to which we had access. It is possible that there is another small boiler in the facility, and that it is used to heat the loading dock area. The gas piping to the gas-fired unit heater was disconnected outside the building, so it obviously is no longer used for space heating. All the other steam heating equipment, including the large boiler, appears to have been out of service for several years.

Plumbing Fixtures: The existing toilets are of the tank type, and are very old and decrepit. The tank has been removed from at least one of them. Judging by the amount of debris covering them, they have not been used in many years.

Domestic Water: We were unable to locate the domestic water service to the building. The water piping that exists appears to be steel pipe, and is in very poor condition. We did locate a water service shutoff valve at grade in front of the building.

Sanitary: A sanitary manhole was found at the front of the facility, but otherwise the extent of the existing system is unknown. Several galvanized steel vent pipes were noted in the toilet rooms, and the condition of these suggests that the underground system is in poor condition and should be relied upon for reuse.

Fire Protection: There are three 4" fire service risers in the facility. These are equipped with alarm valves and appear to have been in use within the past few years.

EXISTING MECHANICAL EQUIPMENT PROBLEMS

As none of the existing mechanical equipment is being recommended for reuse, there i s no need for discussion of existing shortcomings or problems.

ELECTRICAL SYSTEMS

The existing building currently has two electrical services. This is a potential safety hazard since electrical service to the building cannot be disconnected at one location. It is also a violation of the National Electrical Code. The first service enters the building in the southwest corner. This service is fed from 3-25 KVA pole mounted transformers which provide three phase 208 volt service to the building. This service provides three phase 480 volt service to the building. The main disconnect is a 60 amp device fused at 45 amps. This service is not used at this time.

Interior power distribution is accomplished by copper conductors located inside metal conduit to distribution panels throughout the space. The distribution panel boards are a mixture of circuit breaker panel boards and old fused distribution panel boards. The majority of the panel boards are in deplorable condition. Much of the wiring is old and insulation breakdown was noticed on the conductors.

The building is illuminated by eight floor fluorescent fixtures which contain two 96 watt lamps. These fixtures seemed to have been added to the building after initial construction, but do a poor job of illuminating the space.

The existing telephone service enters the building midway on the east wall. This existing service will serve no purpose to the trolley museum. A new service will be required.

There is no emergency lighting or fire alarm in the existing building.

HAZARDOUS MATERIALS

In its current condition, the building contains numerous hazardous waste materials as outlined below. For a more in depth discussion of each of these materials, please see Appendix F.

Asbestos containing material is found in the vicinity of the boiler located in the underground vault at the west end of Bay 3, as well as on associated abandoned steam heating piping throughout the building. This asbestos material is in varying levels of deterioration, depending upon its exposure to the elements.

Lead paint was used extensively throughout the building to cover masonry and wood walls and the heavy timber roof members and wood roof sheathing. Currently, its deterioration is noted by the extensive paint peeling and flaking in all areas of the building.

As a result of pigeon infestation of the second story room at the west end of Bay 2, avian waste build up is extensive and poses a significant health threat to persons working in this area. There is minor build up of avian waste in other areas of building at this time.

The lack of a concrete slab to seal off fissures in the ground also allows radon gas leaks to occur in the basement space of the two story area at the east end of Bay 4.

Solid, residual and hazardous wastes are present throughout the building. A large percentage of this waste is debris, including wood, metal and plastic from the former plastic recycling business that occupied the building up until early 1994. There are several 55 gallon drums containing alkaline liquids as well.

PCBs in old fluorescent light fixture ballasts are present in the building. The extent and quantity is limited primarily to the mezzanine area of the building.

CHAPTER 5: RECOMMENDATIONS

PROGRAMMATIC ISSUES

In early 1992, the Lackawanna Heritage Valley Authority, the County of Lackawanna, and the design team set out to determine the feasibility of establishing a trolley museum in the "Electric City" - Scranton, Pennsylvania. After studying three possible sites, the team determined that the Silk Mill Building was the most appropriate and logical choice to initially house, restore and eventually operate the East Penn Valley Traction Company's donated collection of eight trolley cars. In addition, the County also investigated the possibility of restoring a four mile portion of the former interurban Laurel Line between the museum at SNHS and the County-operated recreational area at Montage Mountain. With the completion of the feasibility study in mid-1992, the design team was authorized to proceed with schematic design of the museum at the Silk Mill Building. With this selection came issues regarding the appropriateness of an overhead electric trolley wire running through an operating steam rail yard. However, at the present time (1995), the NPS and the LHVA, with the aid of the Pennsylvania Historic and Museum Commission, are finalizing an agreement to define how the electric trolleys will move (e.g. under their own power via an overhead electric wire, on-board battery power, or pushed and/or pulled by a diesel tender locomotive) through the SNHS yard between the museum building and the SNHS loading platform for the trolley excursion to Montage Mountain.

During the schematic design phase, four alternatives were studied for moving trolley cars into the building and housing them. Using a range of functional, technical, building preservation and financial criteria, the team determined that the current alternative, as shown in the attached final design development drawings, is the best possible solution. In this alternative, Bay 1 is the visitors' entrance with comfort and orientation services, and Bay 2 contains interpretive exhibit material on trolley systems in general and the collection in particular. Bay 3 houses the ongoing maintenance and storage of the trolley cars used for the excursion, as well as displaying restored cars. Bay 4 contains the long term restoration activities of the current collection and any future acquisitions. The impact on the existing exterior fabric of the building is generally confined to the east elevations of Bays 3 and 4. The design proposes to demolish the east facade of Bay 3 along with its entire flat roof, as well as the 22" high raised wood floor structure in Bay 3, to make way for a new maintenance bay. The new east elevation of this portion of Bay 3 will be recessed back 62'-0" toward the west end of

the bay, thus reflecting the spirit of the original configuration of the complex when Bays 1 and 2 were distinct and separate from Bay 4. The new court created by this modification will also contain a new open air covered shed for storing trolley cars. The interior of Bay 3 will contain a new 5'-0" deep x 42'-0" long inspection pit beneath one of the two new tracks. The other track will be used for short term maintenance and storage of operating trolley cars.

On the east facade of Bay 4, the four southerly window openings will be converted into two 11'-0" w x 15'-0" h trolley car doors, which are necessary to provide access to the high space of the long term restoration bay behind the west parapet wall of the two story block. In addition, the second floor structure of the two story block and its attached west mezzanine and stair structure in Bay 4 will need to be removed to provide trolley car access; however, the exterior appearance of Bay 4 will not be changed due to this modification. The basement space in Bay 4 will be filled in with new compacted stone fill, topped with a concrete slab and two sets of track laid flush with the floor. Also, a new 26'-0" w x 15'-0" h portal will be opened up in the brick bearing parapet wall between the two zones of Bay 4.

Also, a portion of the existing wood mezzanine structure in the west ends of Bays 1 and 2 (including the ramp) will require demolition in order to provide adequate vertical clearance for museum usage of the space. However, a portion of the mezzanine structure will remain intact for storage of trolley related artifacts, tools and supplies.

Half of the wood partition with sliding doors that traverses Bays 1 and 2 will be retained in the visitor services zone of Bay 1 to form a backdrop to the entry sequence of the trolley museum and an adjacent small theater. The other half will be demolished to provide for the interpretive exhibits in Bay 2.

TECHNICAL PRESERVATION ISSUES

Since restoration construction work is scheduled to commence by mid-1996, the following technical preservation issues will be addressed at that time, rather than as immediate emergency remedial measures. Consequently, this report contains no section covering immediate emergency needs.

Foundations

The exposed foundation wall mortar joints at the southwest corner of Bay 1 will require repointing in areas of deep deterioration. All joints in the foundation wall will be cleaned and scraped to determine soundness of the joints. Once cleaned out, those missing more than 1" of mortar (as measured from the face of adjacent sound joints) will be repointed to match adjacent joints. The mortar shall be compatible with the existing in composition and color.

The sandstone water course stone and its joints between the stone foundations and the brick above will be examined for soundness, and any joints deeper than 1" will be repointed as well.

Masonry Walls

In an effort to maintain high quality standards in the masonry restoration work, it will be required in the specifications that the masons must follow *The Secretary of the Interior's Standards for Historic Preservation Projects.*

Roughly 15% to 20% of the existing brick masonry requires repointing, primarily along the bottom three to four feet of the west and north elevations of the building, the top of the draft stack, both sides of the parapet wall of Bay 4, and the bottom three to four feet of the second story room on the west end of Bay 2. Also, extensive areas in the northwest corner of the building, as well as spot locations around the remaining perimeter of the building, will require replacement of spalling or missing brick. Those bricks that have lost more than 3/8" of their face will require replacement. Salvage brick for replacement will come from those wall areas scheduled for opening into new interior and exterior doors and/or windows. If additional new brick is required, it should match the existing brick in size, color and texture, as much as possible.

Brick joints will be scraped clean and tested for soundness, and those found to be more than 1/2" deep (measured from the face of adjacent sound mortar) will be repointed with mortar matching in composition and color.

Bricks broken due to structural stresses or building movement will be removed and replaced with matching salvaged or new brick. Stress cracks in the mortar joints will be cleaned out and repointed as required. Brick missing altogether, such as on the west elevation of the lean-to additions, will be replaced with sound, new brick that matches in size and color.

Cornices, Gutters, and Downspouts

Roughly three-fourths of the roof wood fascia around the perimeter of the building requires replacement in-kind. The need for gutters and downspouts is apparent from the level of deterioration of the brick and mortar joints along the bottom quarter of perimeter walls. Although the roof has an 18" overhang, years of neglect and no evidence of rainwater collection systems have taken their toll on the masonry. Unfortunately, installation of gutters and downspouts is not part of the base preservation construction contract. The cost to install either copper or terne coated stainless steel half round gutters and round leaders is cost prohibitive at this time. This is a priority on the long range preservation list, to be discussed later. Site grading will be done to ensure positive drainage away from the masonry walls, which will minimize water fall-off penetrating them at grade level.

Roof Framing, Sheathing and Roofing Membrane

The roof structure is in need of repair in two locations. In Bay 4, the modified hip truss at the west end of the bay is missing several vertical tension rods. However, posts and beams have been added at the center span of the four trusses on the west end of this bay. These may have been added to compensate for the distress in the truss chords. Also, at the end of the bay, roof purlin connections to the brick wall are failing. The truss with missing members should be repaired and chord members of other trusses should be reinforced. Afterward, the posts and beams at the west end of Bay 4 may be carefully removed and the purlin connections to the brick wall repaired.

Roof leaks in Bays 1 and 4 should be repaired as soon as possible to prevent further deterioration of the structure. Rotted roof deck in these areas should be replaced in-kind concurrently. Some purlins will require replacement, and truss chord members need repair. The entire flat roof structure of Bay 3 will be removed and a new low slope gabled roof will be erected at the west third of the bay space. Water will be shed along the east and west edges of the new EPDM roof surface.

Truss chords can be repaired by replacing soft wood with carefully engineered epoxy patch material and by reinforcing weak members with steel channels. The rotted floor deck in Bay 3 is deteriorated beyond repair and should be replaced in-kind. In the boiler room area, corroded steel floor beams should be replaced.

Looking at circa 1895 and 1910 photos of the buildings, see Appendix D, it appears that the original roofing may have been either a rolled asphaltic membrane or a flat seam metal roof that appears to have been either coated with an asphaltic coating or covered with soot and grime. As seen in the foreground building of the referenced photograph, there does not appear to be any texture in the roof, thus leading one to believe it was not a slate shingle roof nor a

wood shake roof. In light of this discovery, the new roof could be either asphaltic rolled roofing or EPDM with the seams running horizontally. Consideration is also being given to a request by the present owner, the National Park Service, to install 350 lbs/square simulated slate architectural asphalt shingles or cementitious synthetic slate shingles for improved aesthetics, if budget allows. The flat and low slope roofs will have EPDM roofing.

The wood curbs, metal frames and glazing of the four sloped skylights in the south slope of Bay 4 roof will be replaced.

Windows

All of the steel frame and sash pivoting window units and their steel sills will be cleaned of loose scaling, surface rust and paint. First, glazing will be removed and stockpiled and all steel surfaces will be lightly sandblasted or wire-brushed to bare metal and primed in place. Next, severely deteriorated steel areas will be either filled and patched with metal fillers or cut out and replaced with matching profile segments of steel followed by grinding to a smooth finish. Next, all exposed metal surfaces will be primed with a rust-inhibitive primer and then reglazed with existing or new glass and new putty. Broken and/or missing panes will be replaced with existing recycled glazing (see below) or matching new translucent wired type. Finally, all surfaces will be painted with an enamel oil base paint.

Twelve window units along the east facade of Bays 1, 2 and 4 will have their existing glazing harvested for use elsewhere in the building and will either be reglazed with new clear insulated glass to allow views into the new entry and exhibit areas or else be converted to new trolley doors. The pivoting hoppers in all the steel units will be refurbished to operating condition with new hardware as required.

Those steel units that are irreparably damaged, or parts thereof, will be removed and replaced with new steel frames and/or sash to match the existing profiles as required.

Where new metal units are specified, they will either be steel to match the existing types, as in the case where new openings are being made in the existing perimeter masonry walls, or they will be aluminum, as in the case of the new exterior walls surrounding the Bay 3 exterior display track area.

The remaining wood frames on the first level in the north wall of Bay 2 and the south wall of Bay 4 will be refurbished to accept either new true divided double hung wood sash or large sheets of tempered glass with applied muntins. Most of these existing frames need to be scraped, repaired with some minor epoxy filler patching, and then painted.

The existing exterior double hung wood units at the second floor levels require more extensive restoration of frames by either using epoxy fillers, cutting out and patching severely deteriorated sections, or replacement in-kind with complete new frames, depending upon the severity of deterioration. All sash at the second floor should be replaced in-kind with new true divided wood double hung sash and then primed and painted. Glazing will be new clear insulated glass.

Exterior and Interior Doors

All existing exterior doors, except for the two overhead doors and one hollow metal person door in the CMU addition to the north side of the building, should be removed. The overhead door in the southeast corner of Bay 1 should be replaced with a new aluminum curtain wall and entrance door inset from the masonry wall surface. The existing masonry opening should not be altered.

The two wood doors located in the west facade of the lean-to additions on the west side of the building should be replaced with new painted hollow metal frames and doors.

The hollow metal person door and the east overhead door in the CMU addition will be refurbished to operating condition with new hardware and a scraping and painting. The second overhead door on the north side of the addition will be removed and the masonry opening filled in with matching CMU.

The two new trolley doors in the east facade of the recessed Bay 3 and the two new trolley doors in the east facade of Bay 4 will be fabricated of steel frames and wood in-fill panels and clear glazing. The two new person doors into the exterior display track area will be full light aluminum doors and frames set within larger curtain wall systems.

New interior doors between bays in existing or new masonry openings will be either heavy wood flat panel types or aluminum full light entrance doors with side lights. All other interior doors and frames will be painted hollow metal.

The four remaining sliding wood loading dock doors in Bay 1 between the museum entrance area and the theater will be refurbished to operating condition but will be reversibly fixed in the closed position. They will also be scraped, primed and painted along with the remnant wall.

Interior Floor Framing, Walls, Finishes and Equipment

The existing raised wood floors in the west end of Bays 1 and 2 will be repaired and refinished or covered with carpet and/or VCT, while a new concrete topping will be poured over the concrete slab in the east end of Bays 1 and 2. New concrete slabs will be poured in Bays 3 and 4, with new trolley rails embedded flush with the floor.

The remaining mezzanine wood structure will be scraped, cleaned and repainted to encapsulate any existing lead based paint.

The existing interior surfaces of the brick masonry walls, heavy roof timber members and wood roof decking will be scraped, cleaned and repainted to encapsulate any lead based paint throughout the building. Interior GWB and steel stud partitions will be primed and painted.

The freight elevator components will be scraped, cleaned and repainted and left in place as a static exhibit.

MECHANICAL SYSTEMS

All new mechanical systems are being recommended in conjunction with the renovation work, as follows:

Space Conditioning: An agreement has already been reached whereby the Trolley Museum facility is to be connected to the new Community Central Energy Corporation district heating and cooling system that was recently constructed in conjunction with the creation of the adjacent Steamtown National Historic Site. Hot and chilled water will be drawn from these systems and circulated to a variety of terminal equipment located throughout the Trolley Museum to provide acceptable space conditioning.

Plumbing: The proposed locations of new toilet facilities do not coincide with existing services, and the condition of these is generally poor. Obviously, all new fixtures will be provided, and new water and sanitary piping should be extended all the way to the mains to assure satisfactory capacity and performance.

Fire Protection: A new, dedicated fire service should be extended from the nearest main of ample capacity so as to assure a reliable water supply to the sprinkler systems required in conjunction with the hazard levels associated with the proposed building use.

ELECTRICAL SYSTEMS

Demolition: Due to the condition of all electrical components and existing code violations, all existing equipment should be removed and both existing services should be disconnected.

Electrical System and Power Distribution: The new service should be brought in the northeast corner of the building. The service should be an 800 amp, 120/208 volt, three phase, four wire system. Power distribution would start from a main distribution panel and copper conductors in conduit would feed power to sub-panels located throughout the museum. Branch circuit wiring would also be accomplished using copper conductors in conduit as well as some metal clad cable in partitions and other concealed areas.

Lighting:

Maintenance Bays: High intensity downlight fixtures utilizing a metal halide lamp source will provide proper illumination on trolleys for maintenance and observations.

Storage and Office Areas: Fluorescent fixtures will be used to provide ambient lighting in these areas. Recessed fixtures will reduce glare and provide even illumination.

Exhibit Areas: High contrast of light and color will be designed into the lighting system to produce desired affects. Accent lighting including narrow beam spots will highlight individual objects and display lighting will provide an even distribution of illumination on several related projects. Track lighting with adjustable heads and beam spreads will be used to target artifacts. Downlighting will also be designed into the project for both ambient lighting and washing some walls which have large hanging exhibits.

Exterior Lighting: Metal halide fixtures will illuminate the facade and create a pleasing effect for night time visitors. Ground mounted fixtures will wash the front of the building as well as identify a point of entry. Properly positioned spot lights will highlight exterior displays.

Emergency Lighting: Remote lighting fixtures will provide proper illumination of the path of egress should the building lose power. The system will be designed as per all applicable building codes, yet individual fixtures will be camouflaged so that they are not noticed by visitors.

Wiring Devices: Devices include switches, convenience receptacles and special duty receptacles. Switches and dimmers will be located so that only museum personnel can turn on-off lights or adjust lighting levels. Key switches may have to be used in some areas. Convenience receptacles will be positioned so that the proper cleaning as well as other work tasks can be accomplished without cumbersome extension cords. Special duty receptacles that are specified to certain maintenance tools and machinery will be coordinated with the project team so that they are placed and wired correctly for their intended use.

Sound System: An intercom system can direct visitors through the museum as well as explain exhibits. Speakers positioned in appropriate areas with variable volume control can also simulate happenings of the past.

Fire Alarm/Security: The fire alarm and security system can originate from one central panel which will autodial the nearest authority if there is a fire or an intruder. The fire alarm system will consist of manual pull stations located at the exits, audio-visual units which notify building occupants of fire, and automatic detectors which will sense fire in rooms such as storage areas where building personnel are not located most of the day. The security system will be made up of contacts to register any open doors or windows, motion detectors to record and annunciate intruders, and a control panel which can be made flexible to provide proper protection as exhibits change in the museum.

LONG RANGE PRESERVATION ISSUES

Due to the budget constraints of the project, not all preservation and adaptive reuse measures will be completed in the first major phase of construction. After the museum establishes itself and settles into an ongoing operations schedule, it is expected that other preservation issues will be addressed as operation funds allow. These include the following:

In the effort to reduce the effects of free falling rainwater on the lower brick courses around the perimeter of the building, it is strongly recommended to install either new terne coated stainless steel or copper half round gutters and full round downspouts with surface discharge along all hip and gable roof eaves.

Interior and exterior masonry conditions should be monitored on an annual basis. If original bricks continue to deteriorate, they should be cut out and replaced with new bricks that match in size, color and texture. Also, masonry joint deterioration should be closely monitored and addressed as required.

As the museum becomes successful, it will no doubt wish to acquire more artifacts and memorabilia. In the event that more exhibit space is required, the remaining portions of the heavy wood timber mezzanine structure could be removed to make room for displaying these items. The remaining floor and wall surfaces left exposed would then be addressed in the same manner as currently proposed.

As the museum acquires more trolley cars in the future, there will be a need for more covered storage space such as that proposed for the exterior display track area of Bay 3. It is proposed to demolish the CMU addition to the north side of the building and install an exterior storage track with an open air canopy either attached to the north side of Bay 4 or built independently as that proposed for Bay 3.

If additional trolley cars are acquired in the future, it may become necessary to open up a third track in the restoration shop of Bay 4 to accommodate the additional cars and tools required to do the work. To permit addition of the third track, removal of the last two steel windows on the first floor of the east facade of Bay 4 and installation of a new 11'-0" x 15'-0" trolley door in the center of the east elevation to match the other two would be required. Also, to allow a new set of tracks to be laid, the concrete vault would need to be demolished and a new portal opened in the brick wall between the restoration shop and the east portion of the bay.

HAZARDOUS MATERIAL ABATEMENT REQUIREMENTS

The building will be cleaned of all hazardous waste before the general construction work commences. For further detail on the abatement procedures, see the attached Hazardous Waste Abatement Project Manual included in Appendix F.

The solid, residual and hazardous waste, including PCB containing ballasts and alkaline liquids in the steel drums scattered throughout the building, will be removed and disposed according to OSHA and State regulations. A large percentage of this waste, including wood, metal and plastic, may possibly be recycled.

The asbestos containing material found in the vicinity of the boiler and on associated abandoned steam heating piping throughout the building will be removed and disposed of according to current OSHA, EPA and PA DEP regulations and procedures. The asbestos abatement area should be fully contained under negative pressure while the work is being done and follow-up air quality monitoring conducted to ensure a clean and safe work environment for general tradespersons.

The avian waste in the second story room at the west end of Bay 2 should be removed and disposed of according to applicable OSHA and State regulations regarding infectious waste. Likewise, this area should be fully contained under negative pressure during abatement procedures and will require follow up air quality monitoring before general construction begins.

Loose and peeling lead paint on the masonry and wood walls and the heavy timber roof members and wood roof sheathing should be removed and disposed as part of the general waste removal and disposal process. Areas containing loose and peeling lead paint should be scraped by hand with all created debris swept up and disposed of according to current OSHA and State regulations. After scraping, the surfaces should be cleaned with a neutralizing wet agent, allowed to dry and then covered with an approved encapsulant. Lead paint abatement areas will require follow up air quality monitoring once the work is complete and will require periodic monitoring to ensure their stability. These surfaces should then be painted to match other interior finishes.

The radon gassing occurring in the basement space of the two story block at the east end of Bay 4 should be addressed by encapsulating with compacted fill, a polyethylene vapor barrier and 6" thick concrete slabs.

TROLLEY MUSEUM CONTRACT DOCUMENT ORDER OF MAGNITUDE COST ESTIMATE
Prepared for Lackawanna Heritage Valley Authority
Revised 15 December 1995

Building Area	
Main floor	28346
2nd Flr.-Bay 2	2296
TOTAL AREA	30642

Architect - LEUNG HEMMLER CAMAYD, SCRANTON, PA
Engineer - BORTON LAWSON, WILKES-BARRE, PA

HARD COST

Division	% of total cost	Unit Price	Estimated $'s
1 - General Conditions	11%	10 month duration	$234,157
2 - Site Work and Demolition	5%		$127,825
- Hazardous Materials	4%		$95,000
3 - Concrete	4%		$81,254
4 - Masonry	8%		$110,722
5 - Steel and Misc. Metals	7%		$77,970
6 - Carpentry and Millwork	4%		$94,585
7 - Moisture Protection	12%		$155,692
8 - Doors and Windows	7%		$128,184
9 - Finishes	6%		$97,516
10 - Specialities	1%		$17,175
15 - Mechanical HVAC	5%		$166,976
- Plumbing	6%		$113,404
16 - Electrical	10%		$221,182
- Telephone/Security Allow.	1%		$15,000
BUILDING SUBTOTAL	89%		**$1,736,642**
17 - Trolley Track - Includes SNHS lead & turnout; trolley lead; Bay 4 turnout and interior/exterior track. Does not include any track work for or in Bay 3 area.			$170,500
General Contractor's Fee	4%	0.05	$95,358
SUBTOTAL	93%		**$2,002,500**
Contingency	7%	0.08	$160,200
TOTAL ESTIMATED HARD COST	Cost per sq. ft.	$71	**$2,162,700**

SOFT AND OTHER COSTS

Permit/ClrkWrks *	25.00/M	$54,068
Insurance *	2.00/M	$4,325
Bond Costs *	12.5/M	$27,034
Bridge Loan Interest Cost *		$25,000
Furniture Allowance		$5,000
A/E Fee		$170,500
Exhibit Design Fee		$71,500
Additional Services - Includes LTK's $37,900 fee for all track design work, but no electrification design work		$58,520
Reimbursable Expense Allowance		$25,000
Exhibit Allowance		$252,750

* These line items need to be verified by the LHVA

SOFT & OTHER SUBTOTAL	**$693,697**
TOTAL PROJECT COST Hard and Soft Costs	**$2,856,397**

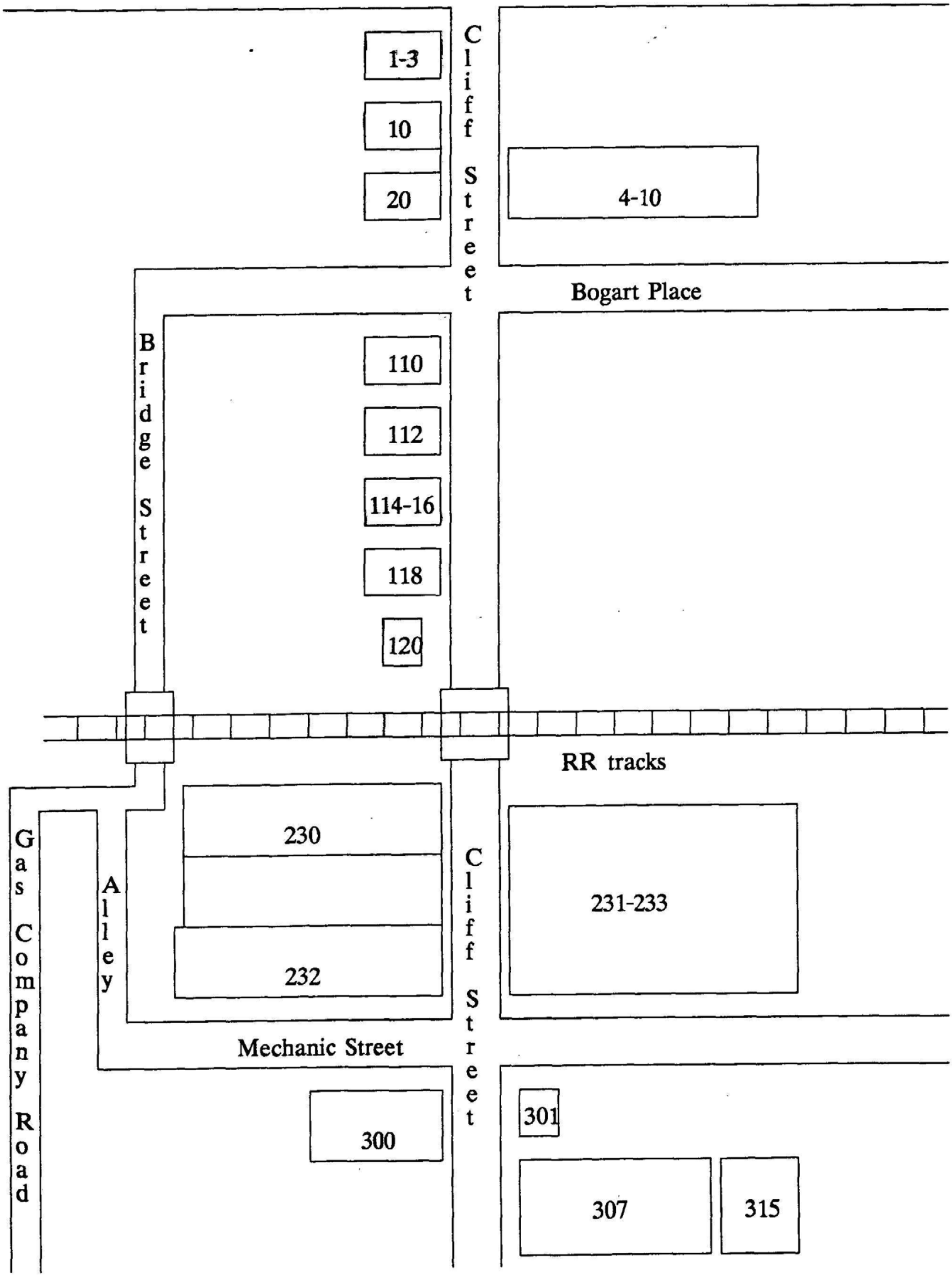
ADD ALTERNATES:

1. Bay three canopy (two track scheme)	$34,485
2. Restore five arched windows and masonry at east elevation of Bays 1 & 2.	$25,000
3. Substitute mineral fiber cementitious shingles for asphalt shingles at roof	$51,000

DEDUCT ALTERNATES:

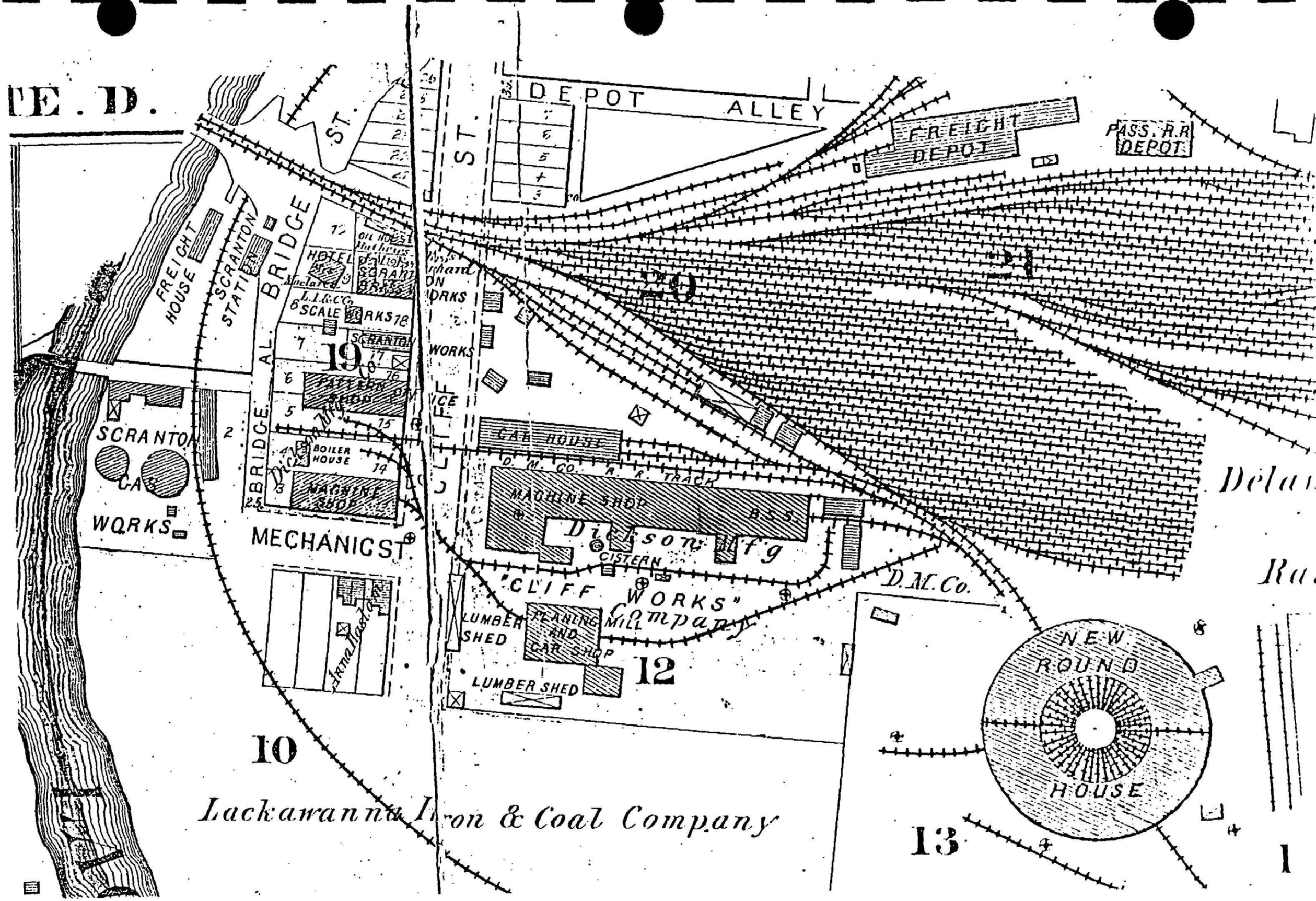
1. Eliminate removal and disposal of solid waste material throughout building (Incl'd in HazMat line item above)	($38,850)

LHV TROLLEY MUSEUM: Historic Structures Report 230-232 Cliff St., Scranton, PA
BUILDING LOCATOR MAP (for reference only)

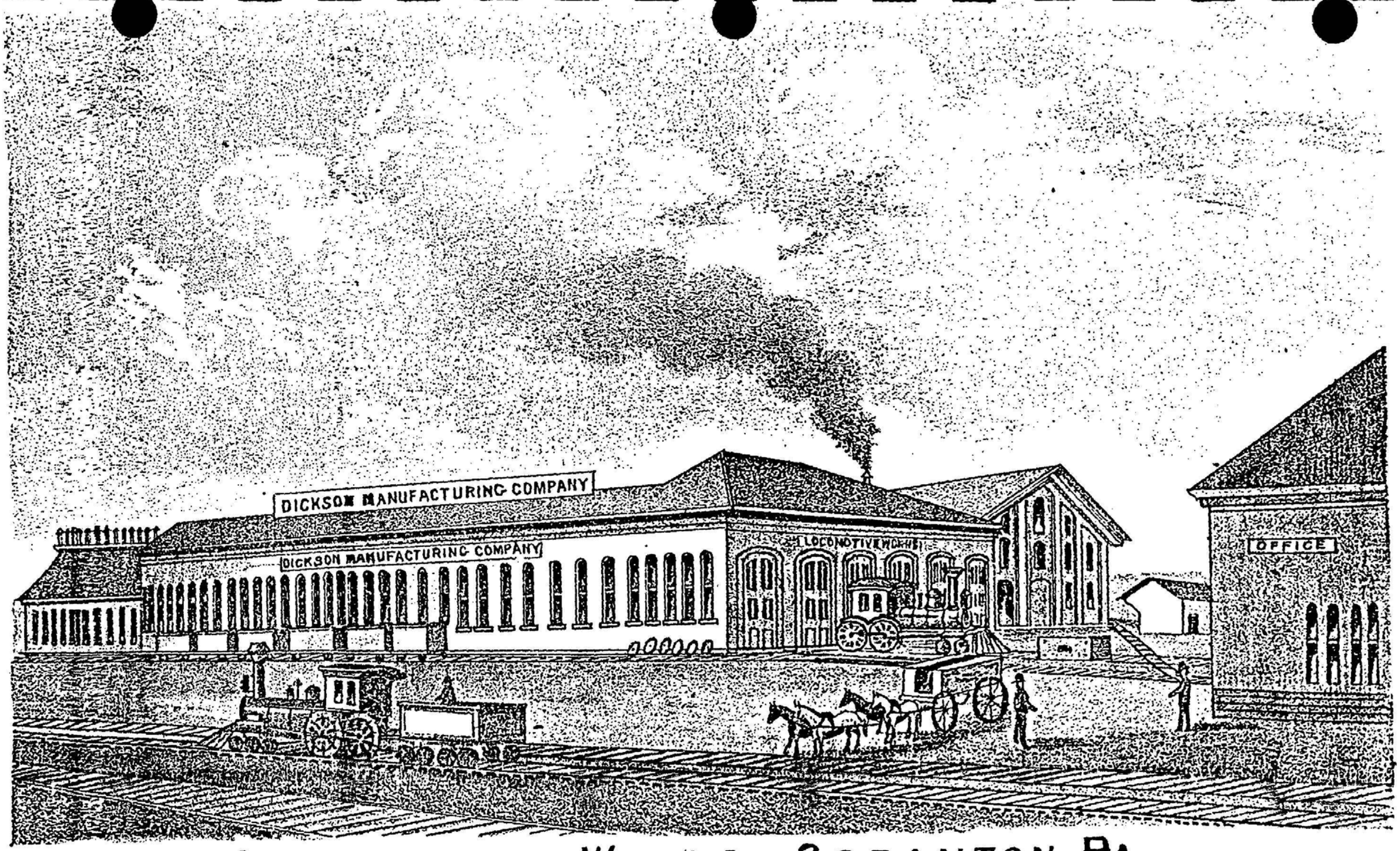


PROPERTY OCCUPANCY TIME LINE:
230-232 Cliff Street, Scranton, PA

	230 Cliff Street	232 Cliff Street
1851	Cooke & Co. property	Cooke & Co. property
1862	Dickson Co. property	Dickson Co. property
1874	fire, Dickson Co. Planing Mill	fire, vacant land
1877	Dickson Co. Pattern Shop	Dickson Co. Machine Shop
1884	Dickson Co. Wood Shop	Dickson Co. Machine Shop
1888	Dickson Co. building	Dickson Co. building
1898	vacant building	Wall Plaster Works
1902-10	American Locomotive Co. store room	Amer. Loc. store room
1911-12	vacant building	vacant building
1913-14	Scranton Silk Co.	vacant building
1915-17	Scranton Silk Co.	Maccar Truck Co.
1918-20	Scranton Silk Co.	United Silk Mills
1921-25	Williams Bakery	United Silk Mills
1926-37	Williams Bakery	silk plant, Lacka. Trust
1938-55	Williams Bakery	Williams Bakery
1956-77	Scranton Dry Goods Co. warehouse	Scranton Dry warehouse
1979-80	Oppenheim's warehouse	Oppenheim's warehouse
1982-88	Blatt's Furniture warehouse	Blatt's Furn. warehouse
1991	Laminations, Inc. warehouse	Laminations warehouse

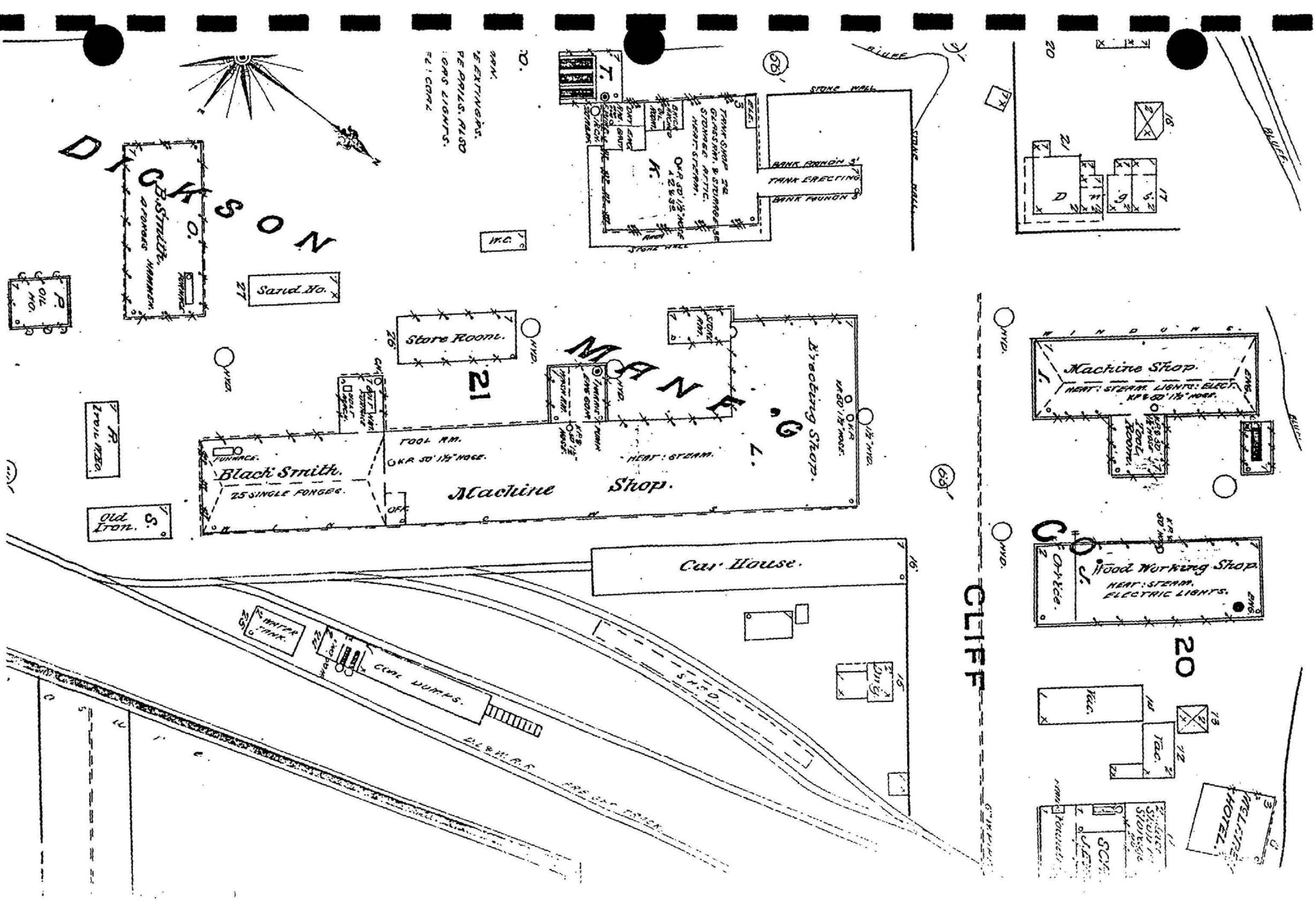


City Atlas of Scranton, Pennsylvania.
Plate D, Page 22. Philadelphia: C.M. Hopkins, C.E., 1877.

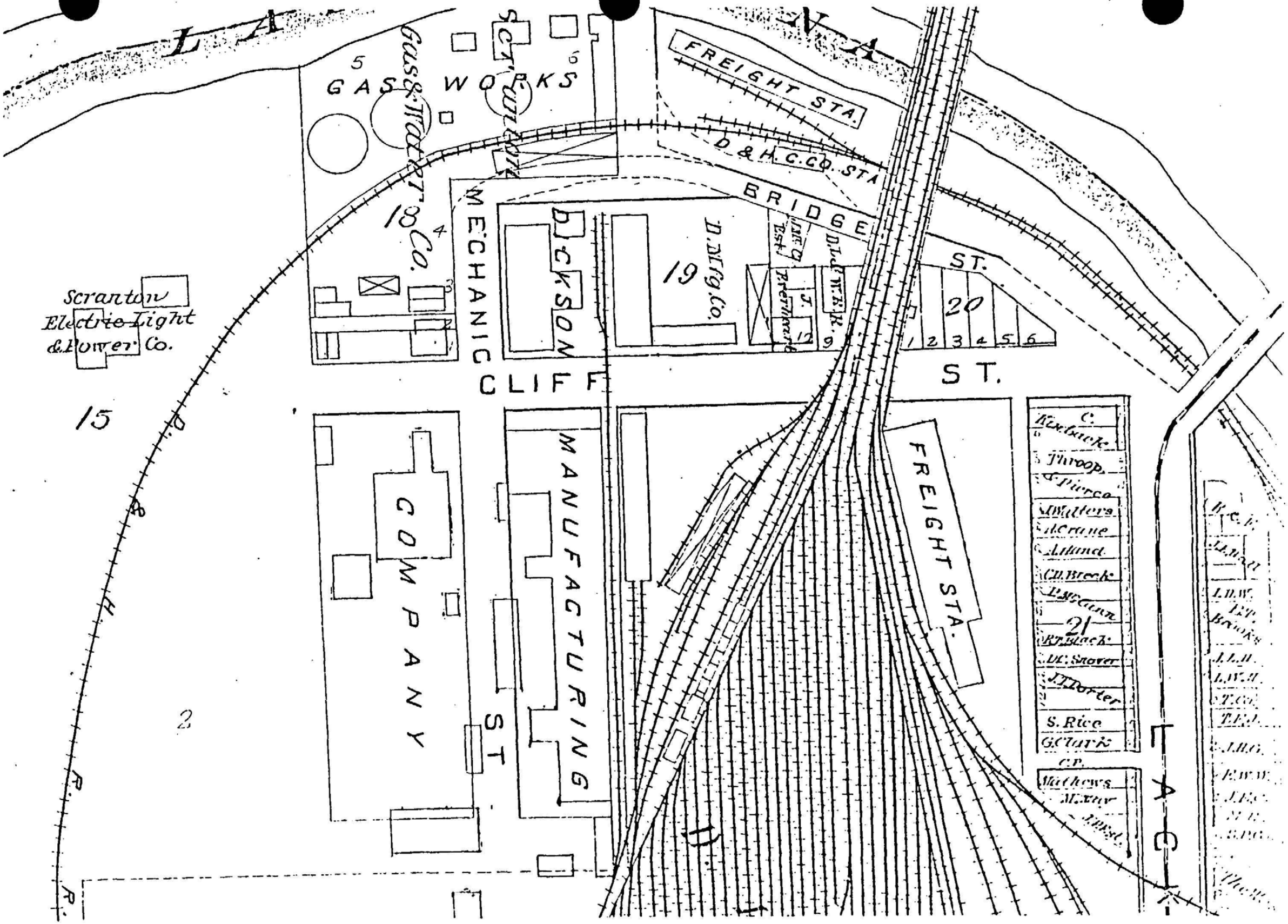


LOCOMOTIVE WORKS. SCRANTON, PA.

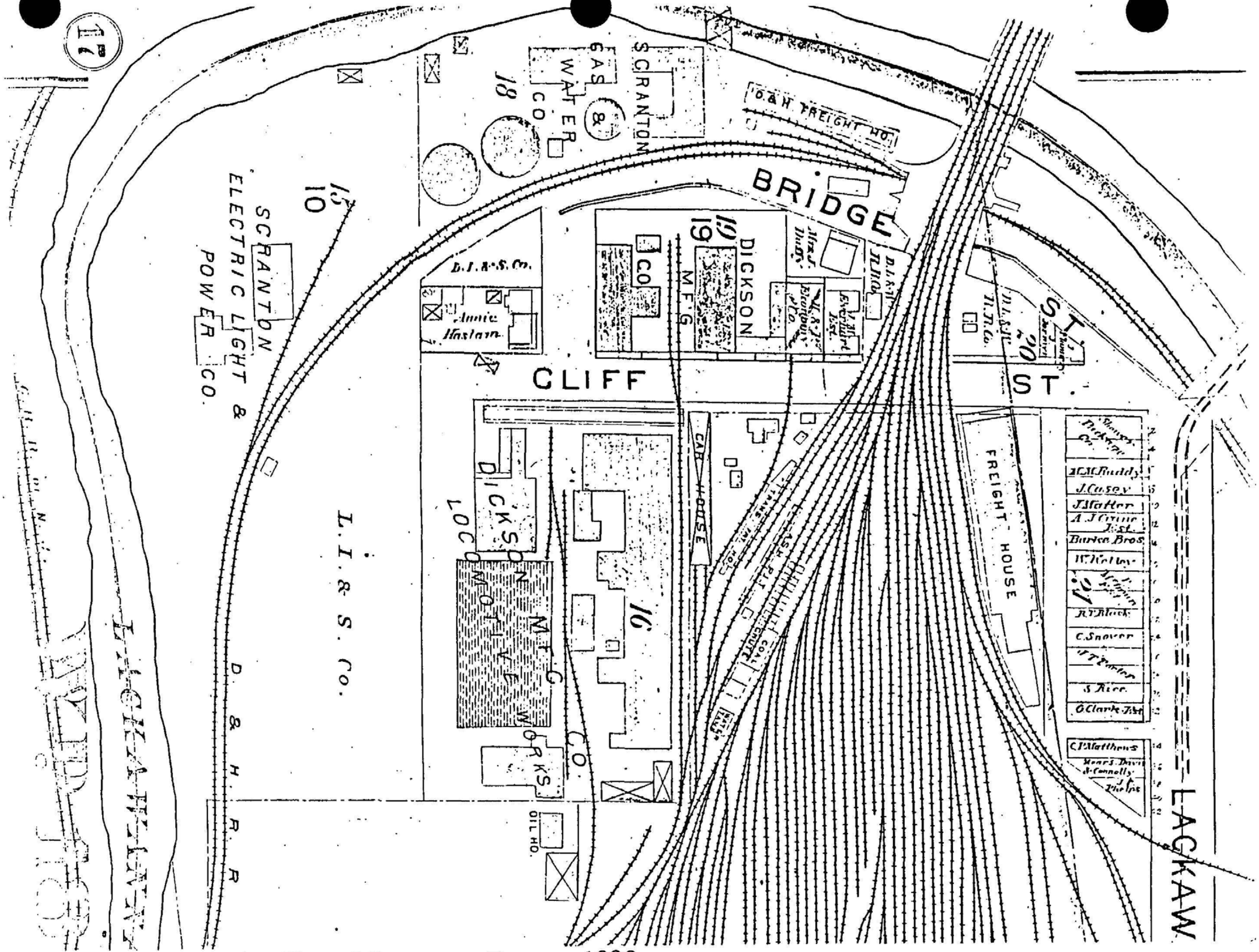
City Atlas of Scranton, Pennsylvania.
[un-numbered page]. Philadelphia: C.M. Hopkins, C.E., 1877.



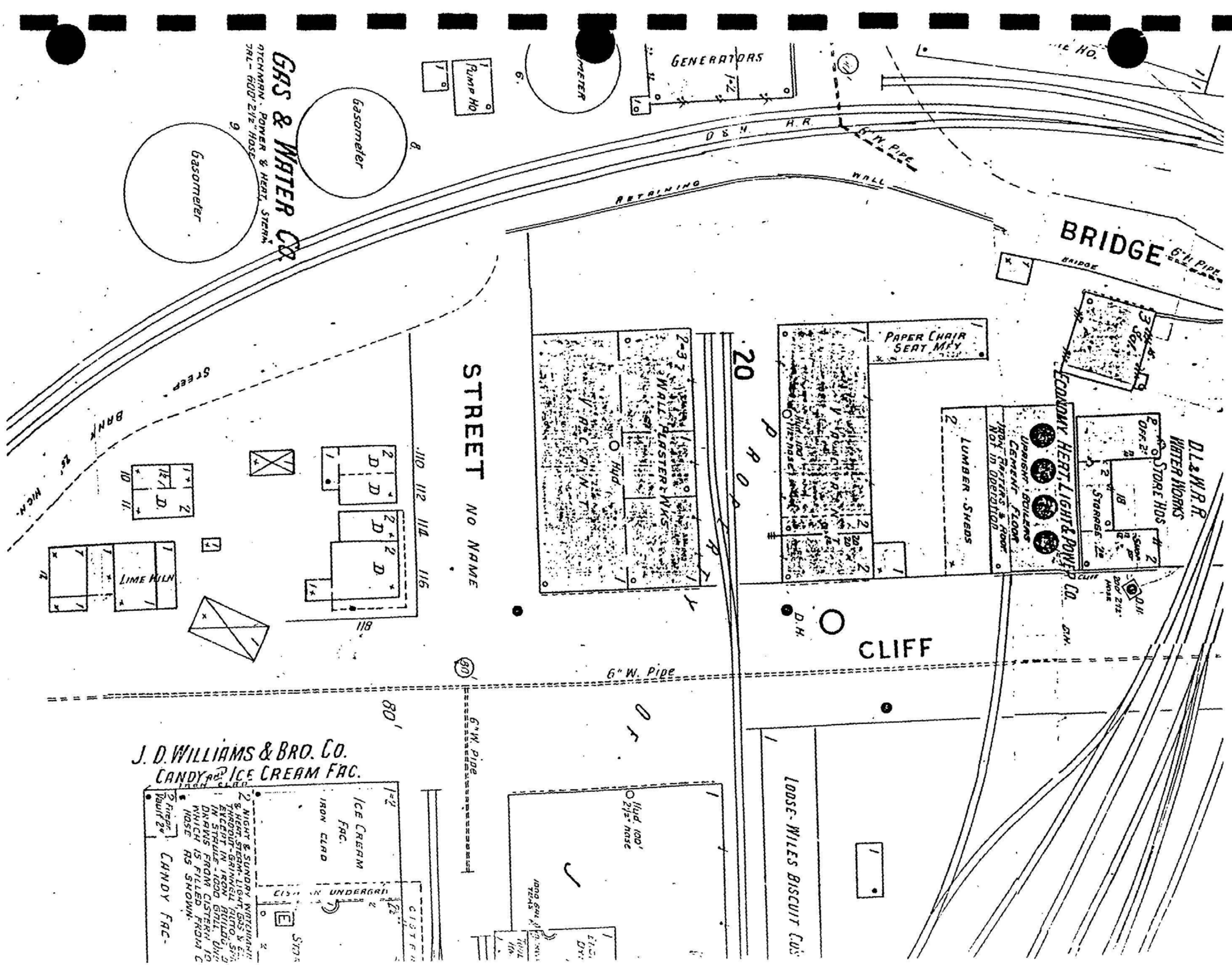
Scranton, Penn.
Plate 16. New York: Sanborn Map and Publishing Co., April, 1884.



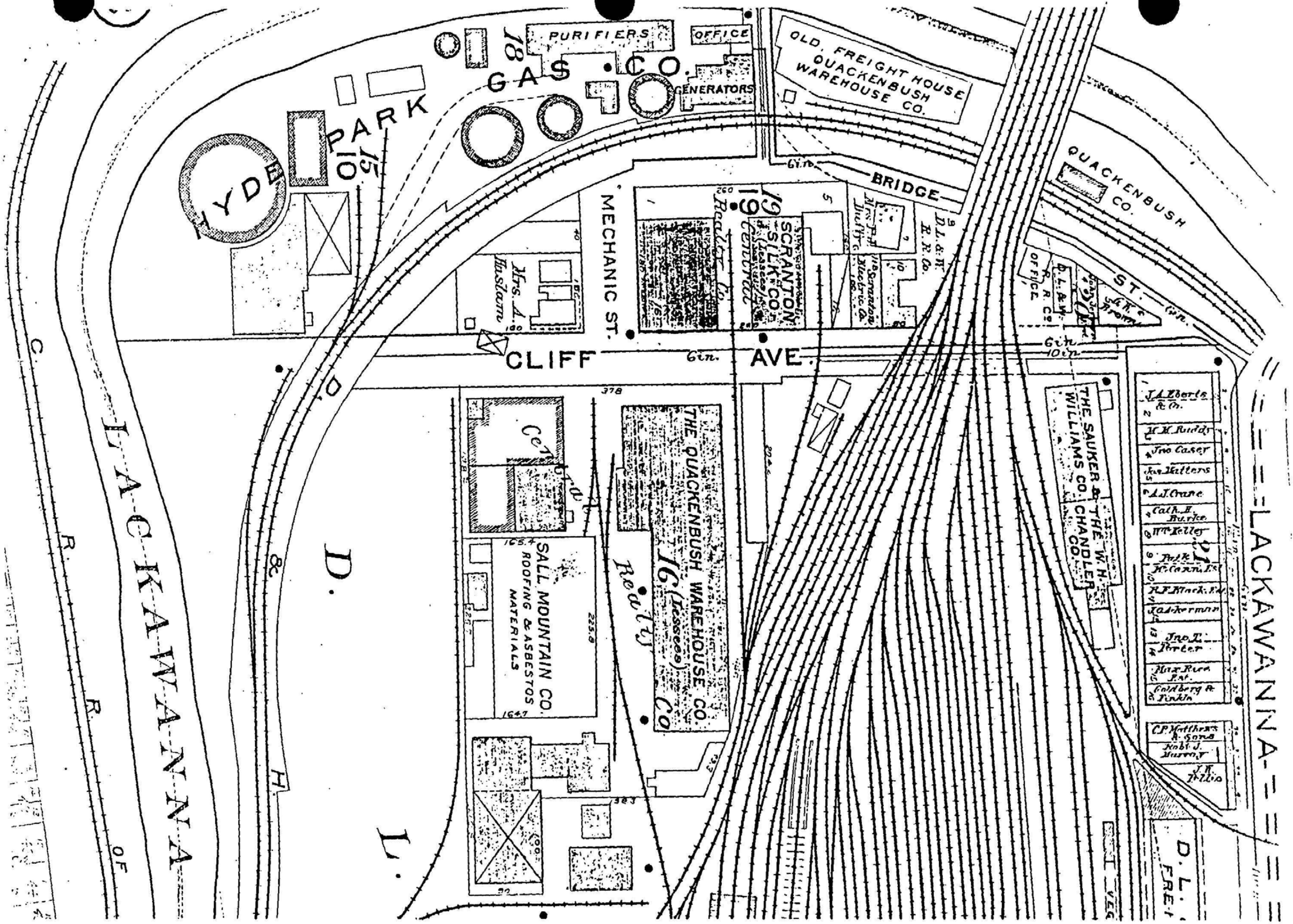
Atlas of the City of Scranton and Borough of Dunmore, Pennsylvania.
Plate A. Philadelphia: L.J. Richards & Co. (C.M. Hunter, C.E., and A.C. Howell, C.E.), 1888.



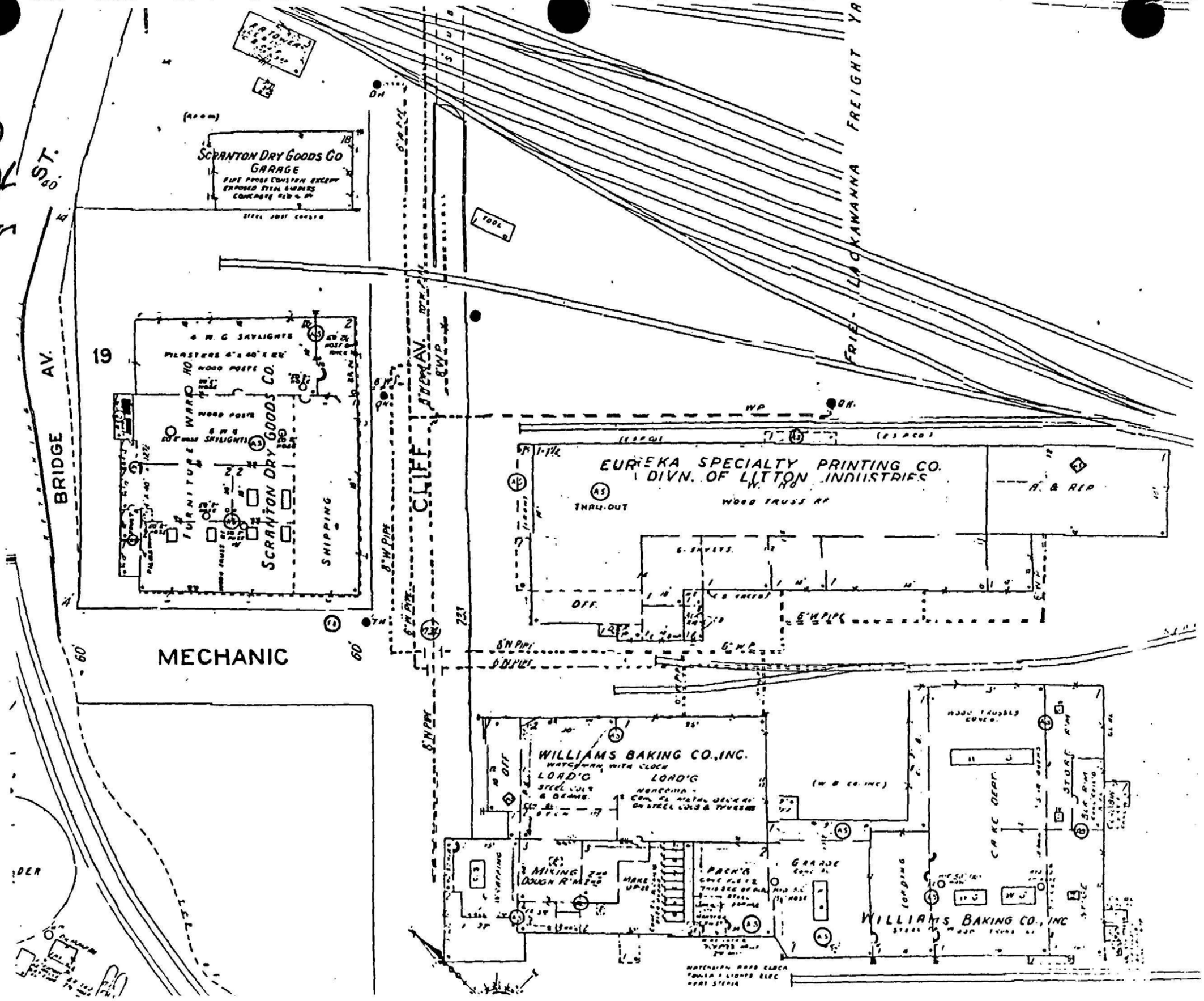
Atlas of Surveys of the City of Scranton, Penna., 1898:
Outline and Index of the City of Scranton and Borough of Dunmore, Pennsylvania.
Plate 18. Scranton: J. Henry Schwenker (bindery).



Insurance Maps of Scranton, Pennsylvania, Including Hyde Park.
Vol. 2, Plate 116. New York: Sanborn-Perris Map Co., Limited, 1898.

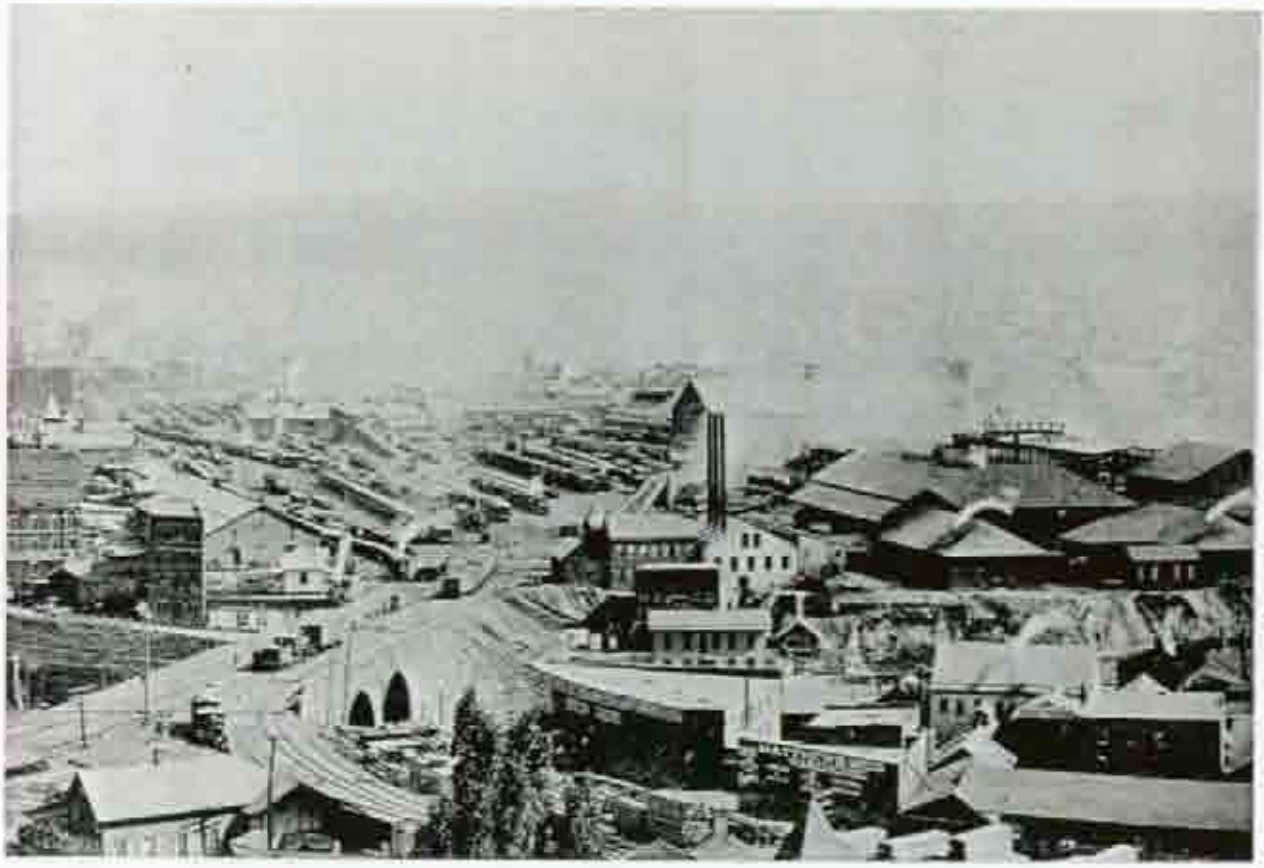


Atlas of the City of Scranton and Borough of Dunmore, Lackawanna County, Pennsylvania.
Plate 19. Philadelphia: Albert Volk, E. Robinson, Henry J. Kuehls, 1918.

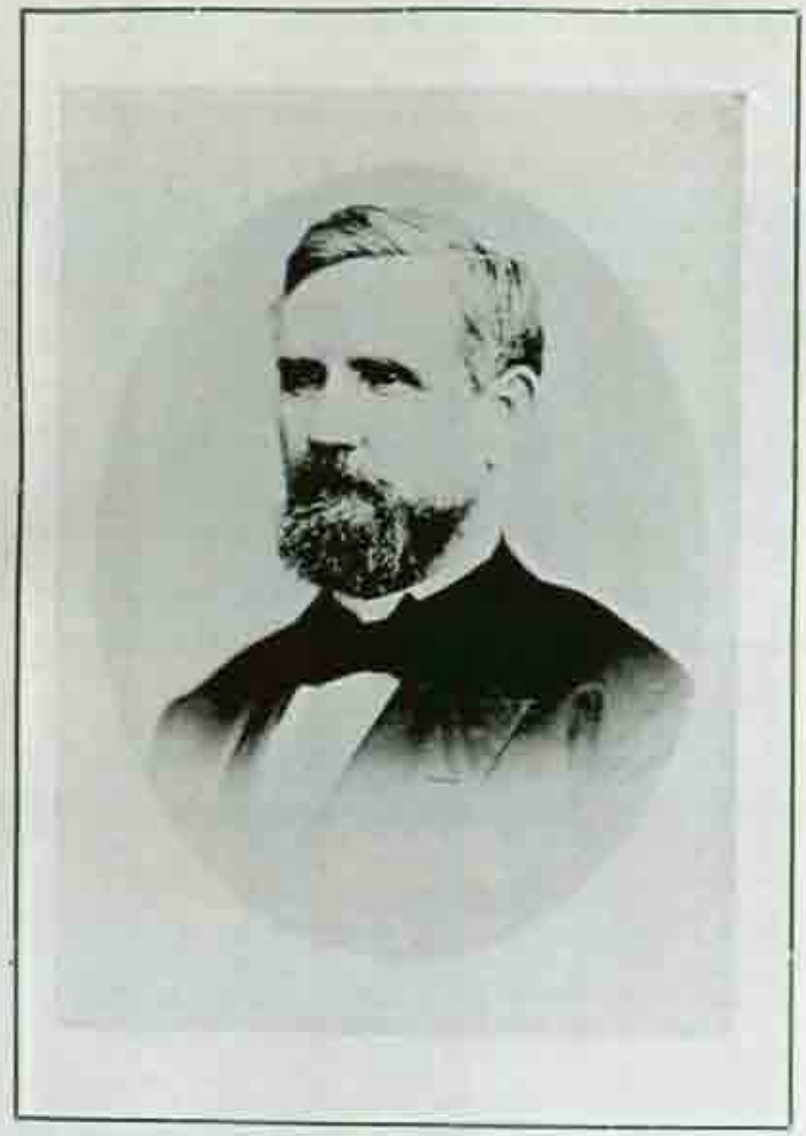


Insurance Maps of Scranton, Pennsylvania.
Vol. 1-A, Plate 15A. New York: Sanborn Map Co., 1956.

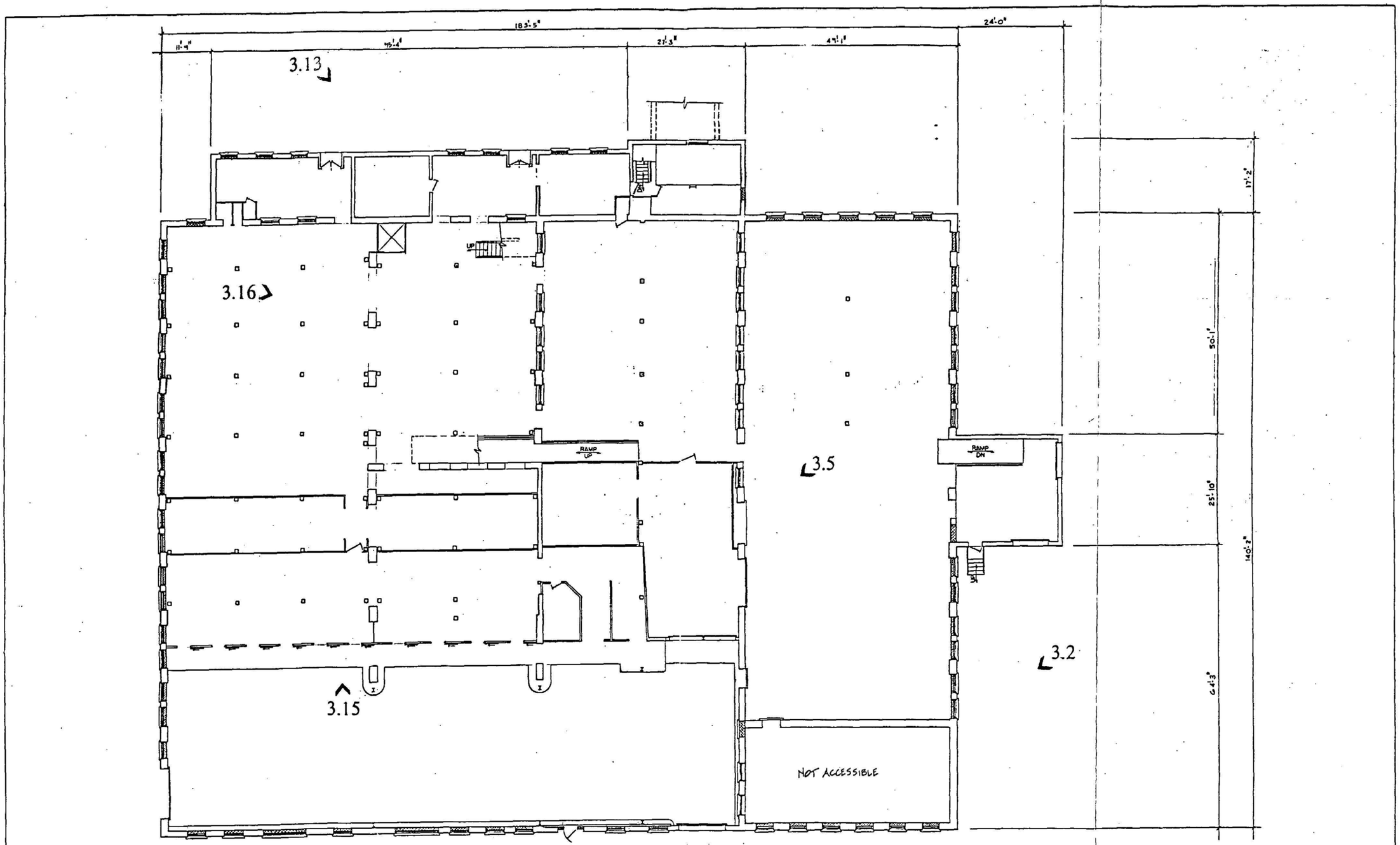
View of Scranton from Fair View of American Locomotive Works & D.L.&W. R.R. Yard and South Side, circa 1910. Harry Bamff, photographer.



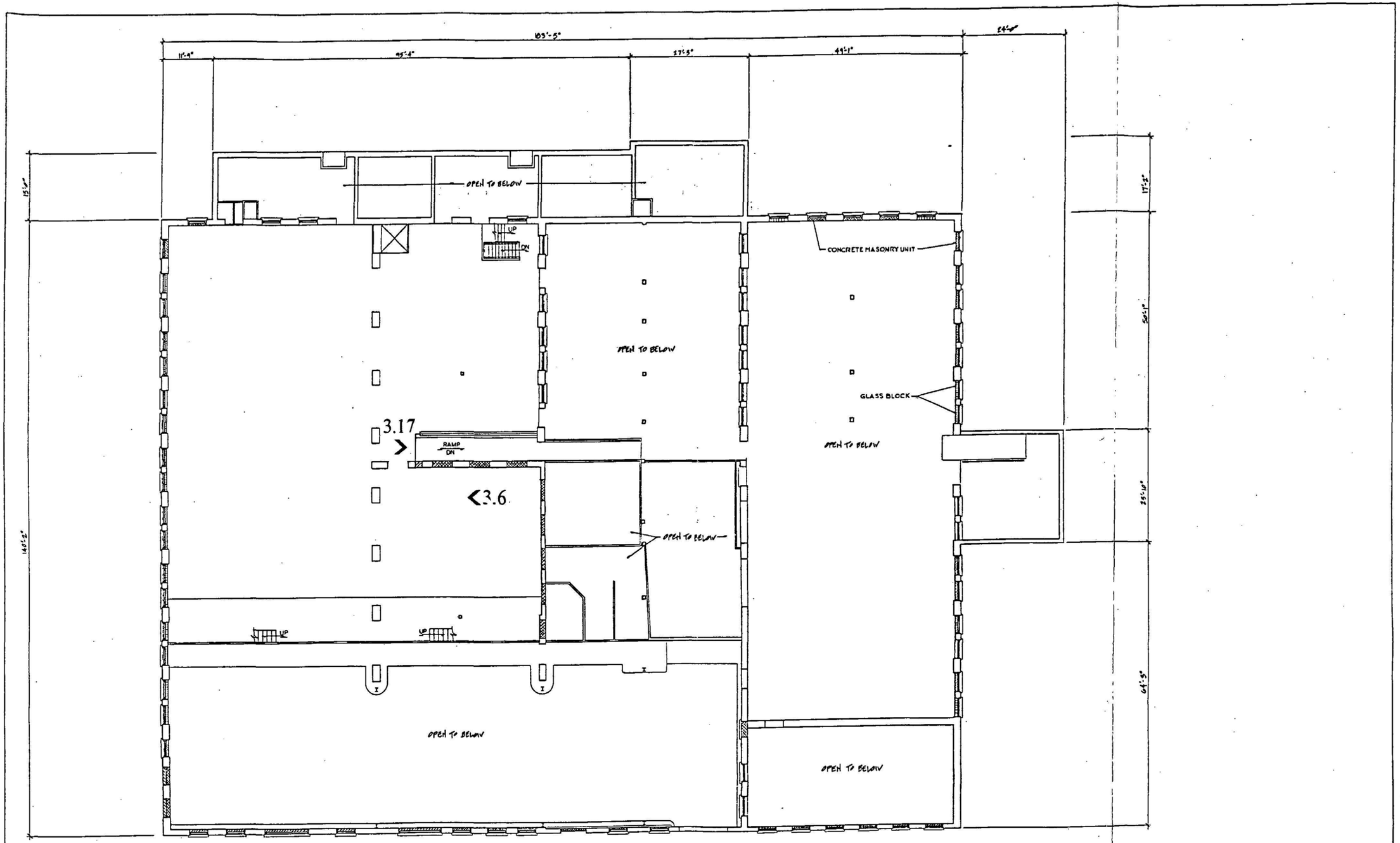
View of Dickson Locomotive Works and D.L.&W. Railroad Yards, Scranton, PA., circa 1895; unknown photographer.



THOMAS DICKSON



Existing Conditions Photograph Key



MEZZANINE PLAN

SCALE OF FEET

Existing Conditions Photograph Key

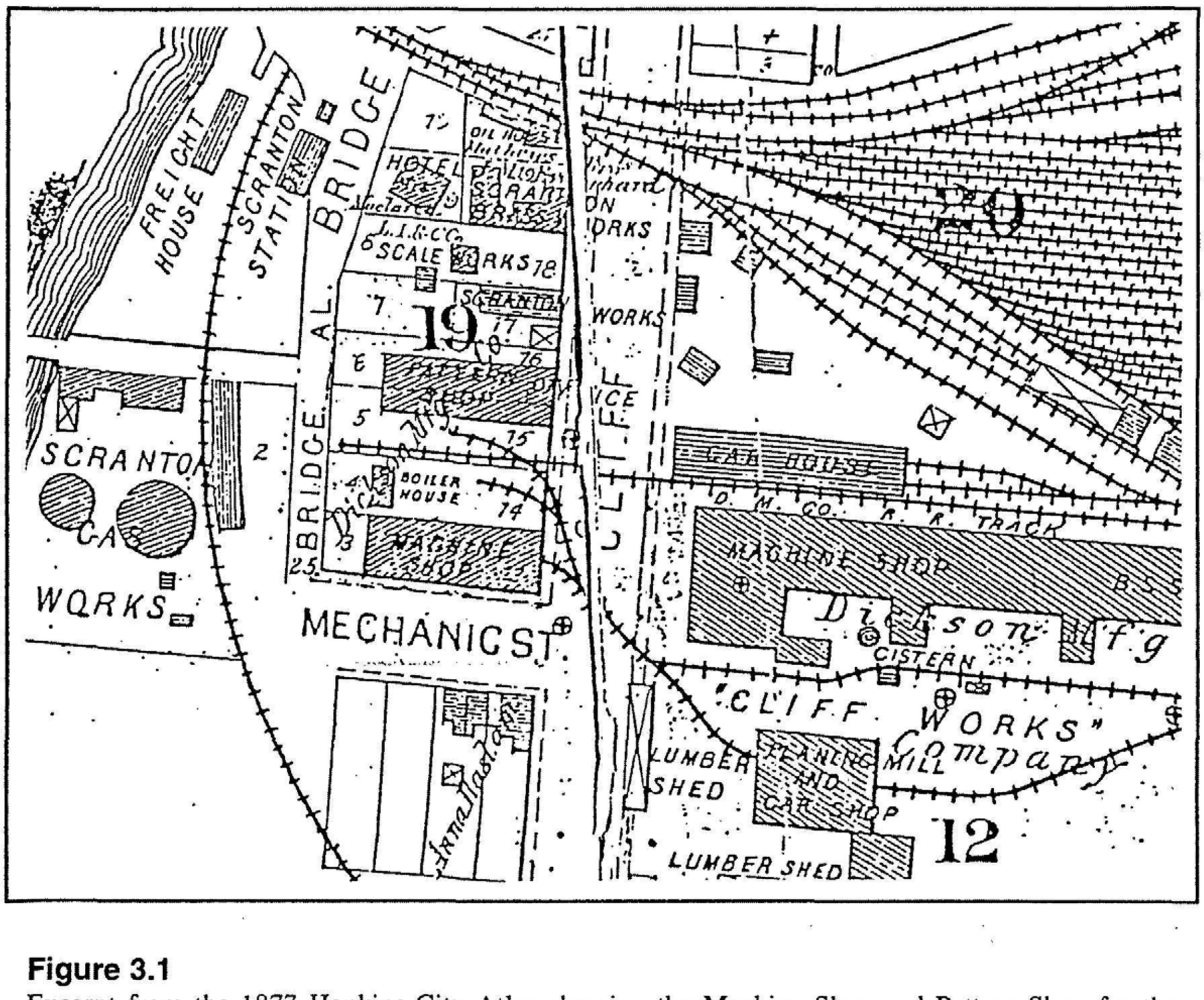


Figure 3.1
Excerpt from the 1877 Hopkins City Atlas showing the Machine Shop and Pattern Shop for the Dickson Manufacturing Company. Note the Boiler House and the incoming railroad tracks.

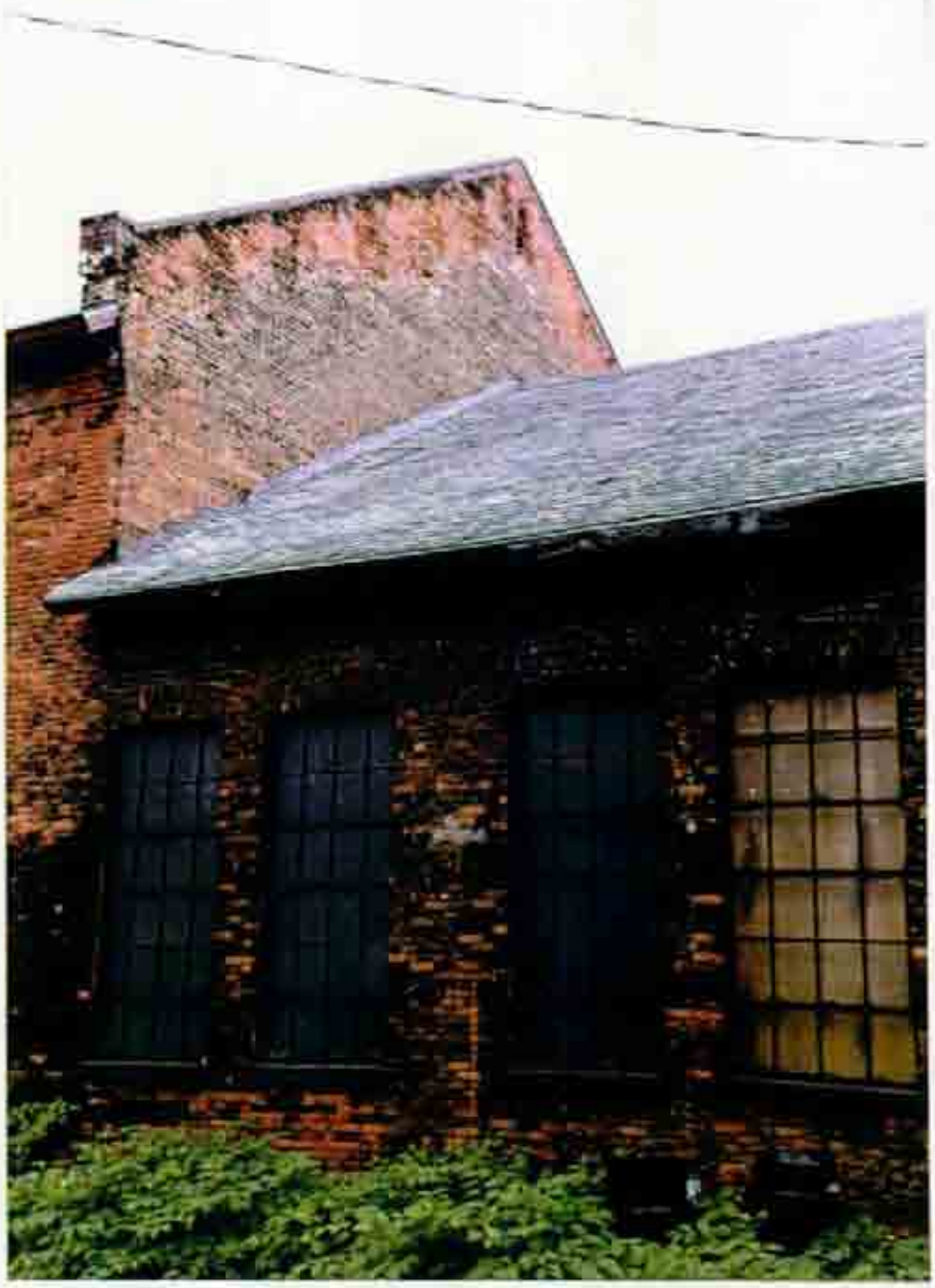


Figure 3.2
Detail of brick parapet on Pattern Shop; note that there are no butt joints or lines of demarcation to suggest anything other than that the building was originally constructed in this configuration.

Figure 3.3
Detail of east elevation of Machine Shop (Bay 1), showing original large door opening that has since been partially closed in.

Figure 3.4
General view of east elevation of the Machine Shop (Bay 1) on the left side, and Pattern Shop (Bay 4) on the right side.

Figure 3.5
Detail, looking south, toward the original interior wall of the south elevation showing the round arch door in the center of the building.

Figure 3.6
Detail, looking north, at the top of the original arched door opening in the center of the Machine Shop (Bay 1). This view was taken from the mezzanine of the Tool Room (part of Bay 2); note also how the brickwork and the arched windows in the Tool Room (right side of photo) are similar to the windows in the original Bay 1 and Bay 4.

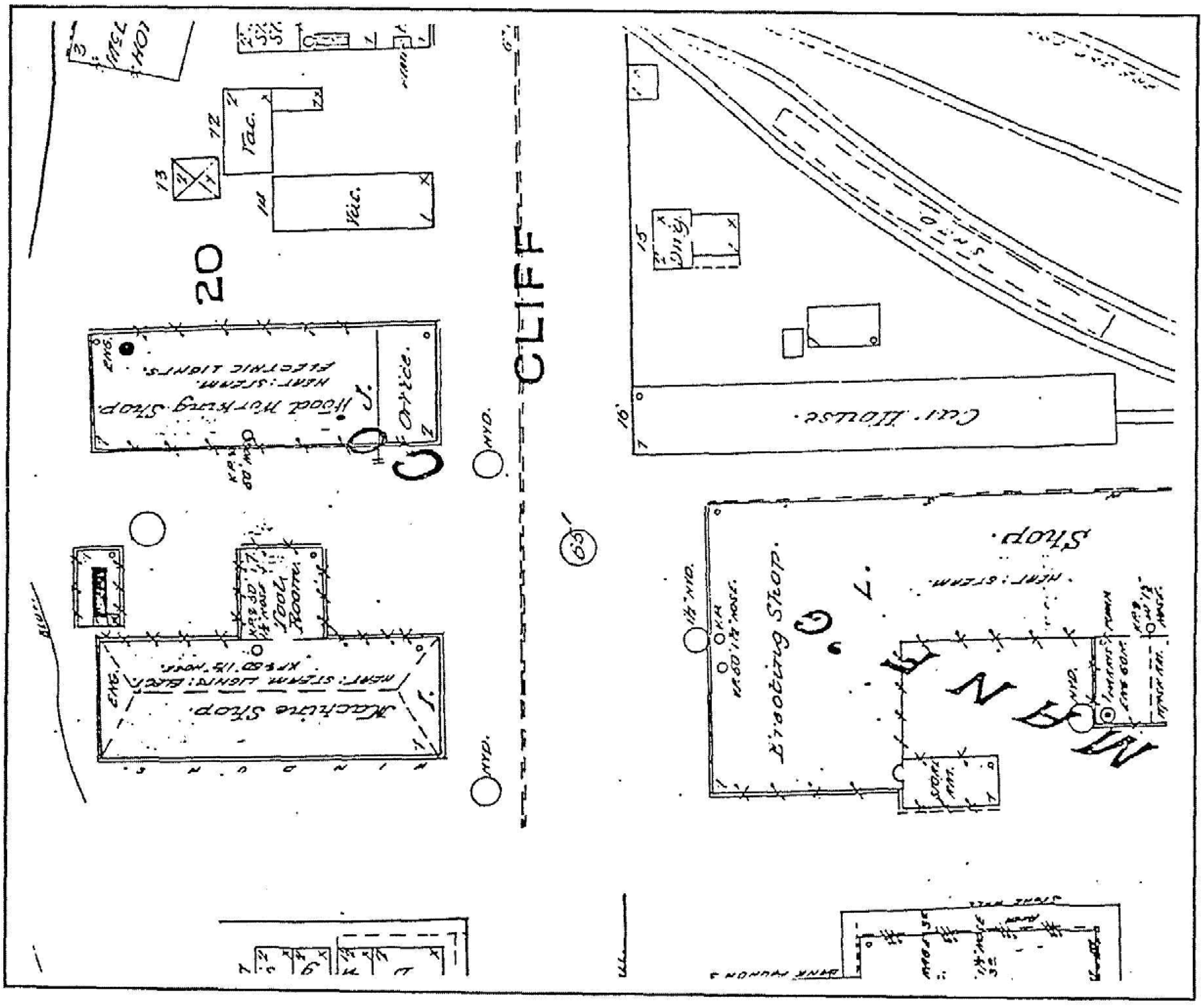


Figure 3.7
Excerpt from April 1884 *Sanborn Map* showing the addition of the Tool Room; note how the Boiler House is described. (This view is intentionally mounted upside down, so as to keep the orientation consistent for all maps.)

Figure 3.8
Detail of ghost of the former one story, gable roofed addition on the north side of Bay 4.

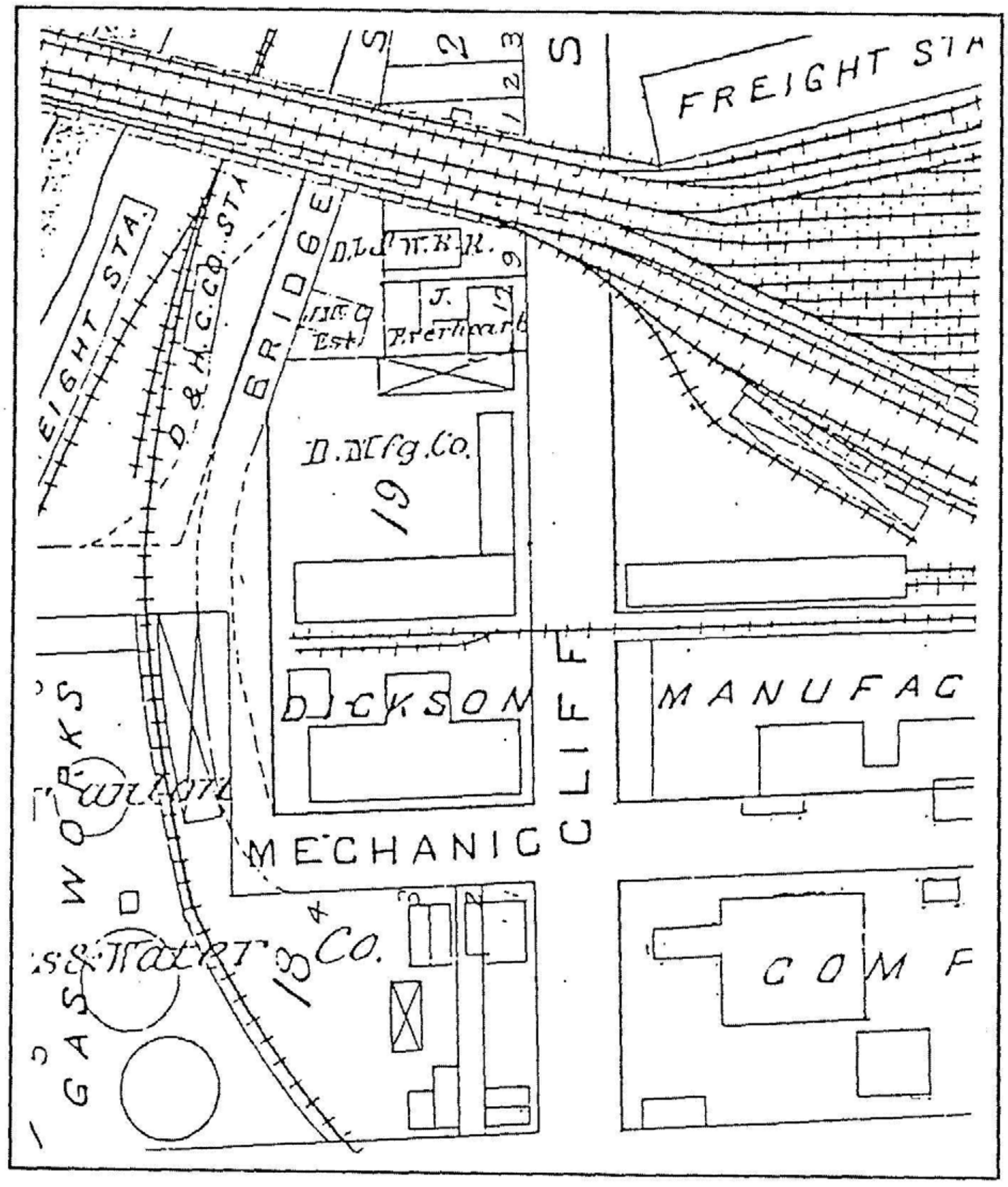


Figure 3.9
Excerpt from 1888 *City of Scranton Atlas* showing little change to the buildings, except for the addition on the north side of Bay 4.

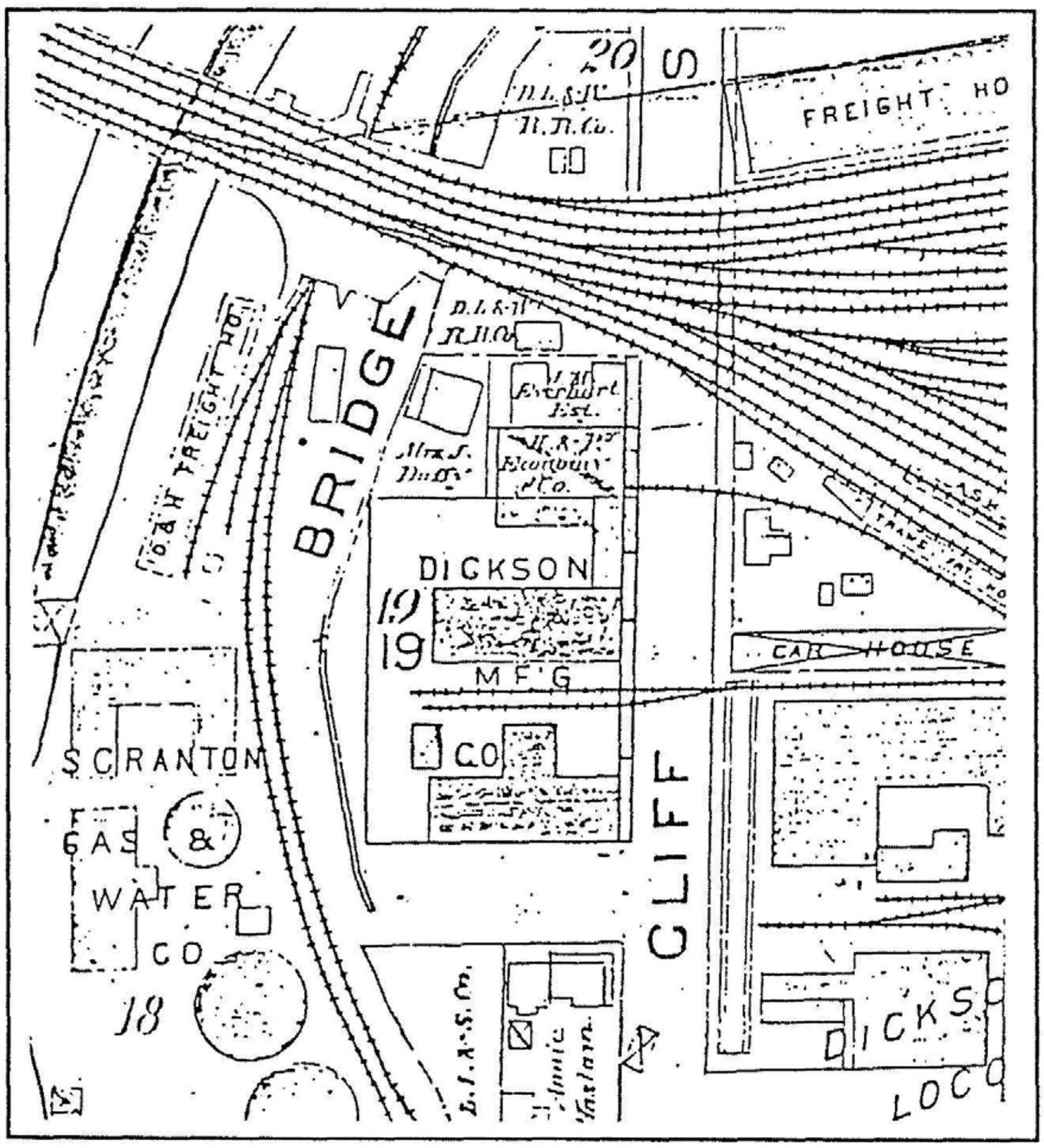


Figure 3.10
Excerpt from 1898 *Atlas of the City of Scranton* showing very little change in the configuration of the buildings.

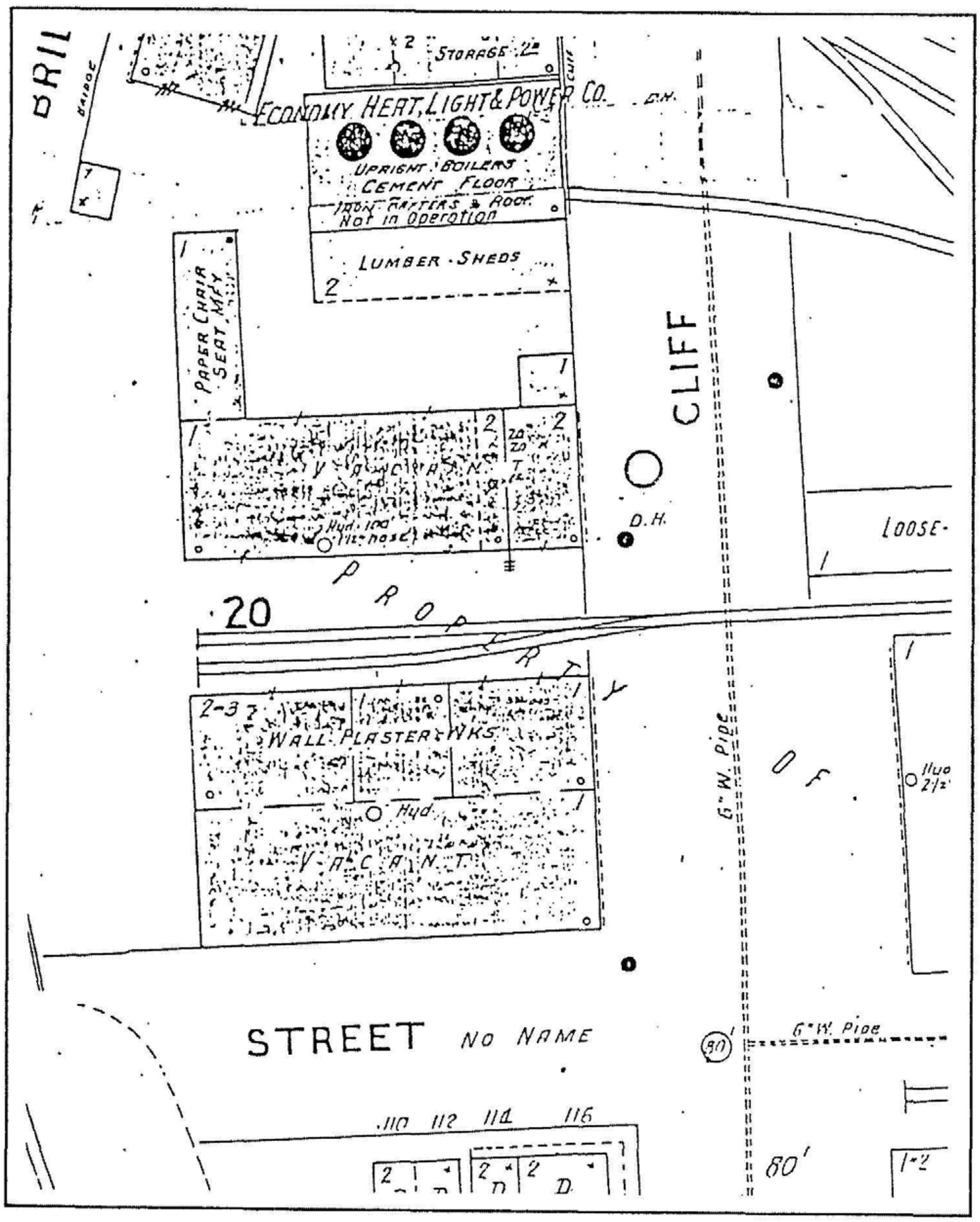


Figure 3.11
Excerpt from the 1898 Sanborn-Perris *Insurance Map of Scranton* showing the completion of Bay 2 and the shortening of the addition to the north of Bay 4.

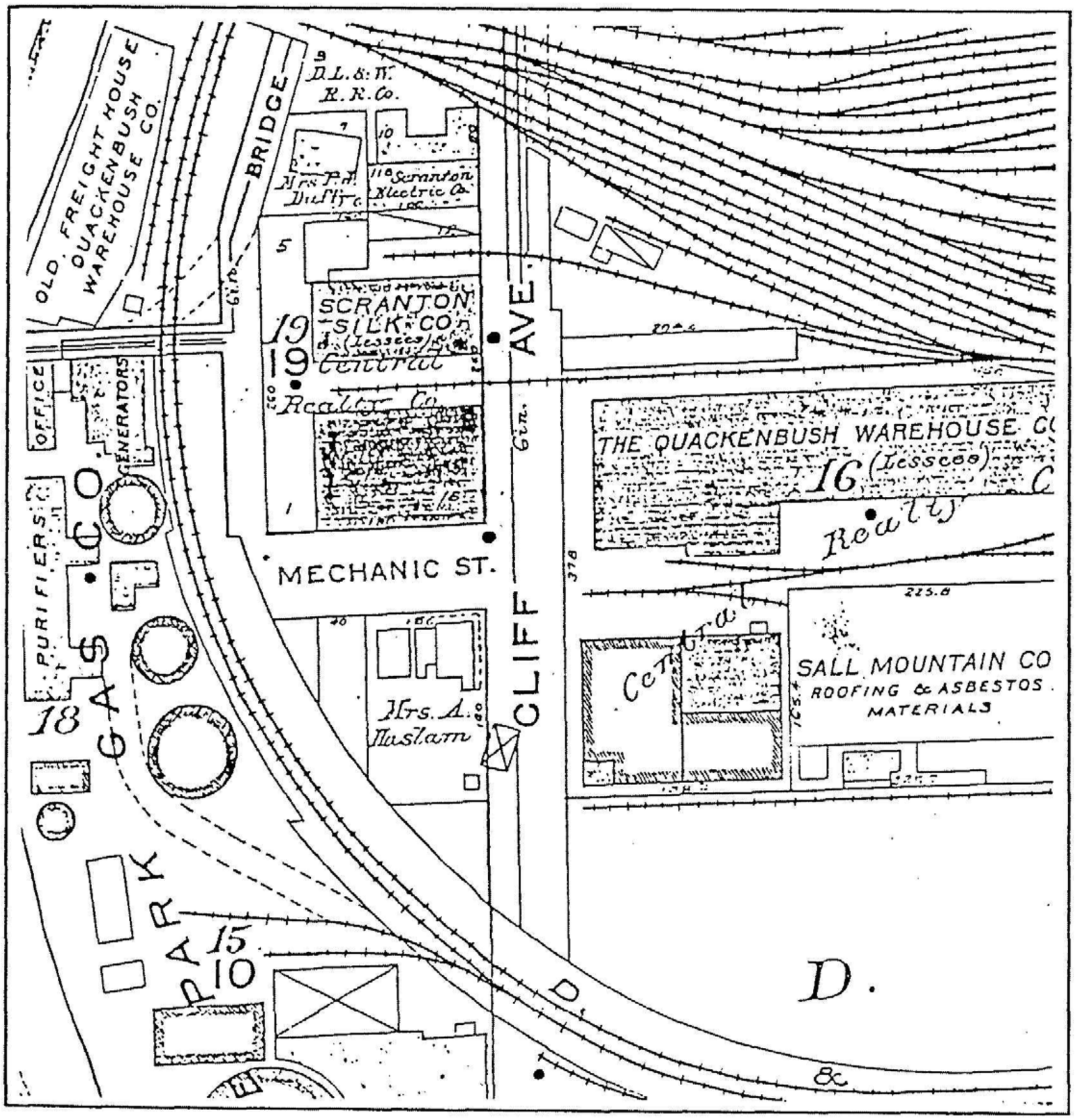


Figure 3.12
Excerpt from the 1918 *Atlas of the City of Scranton* showing that the Scranton Silk Company is leasing the Bay 4 building from Central Realty Company.

Figure 3.13
Detail of painted lettering for United Silk Mills on the west facade of the third floor of Bay 2.

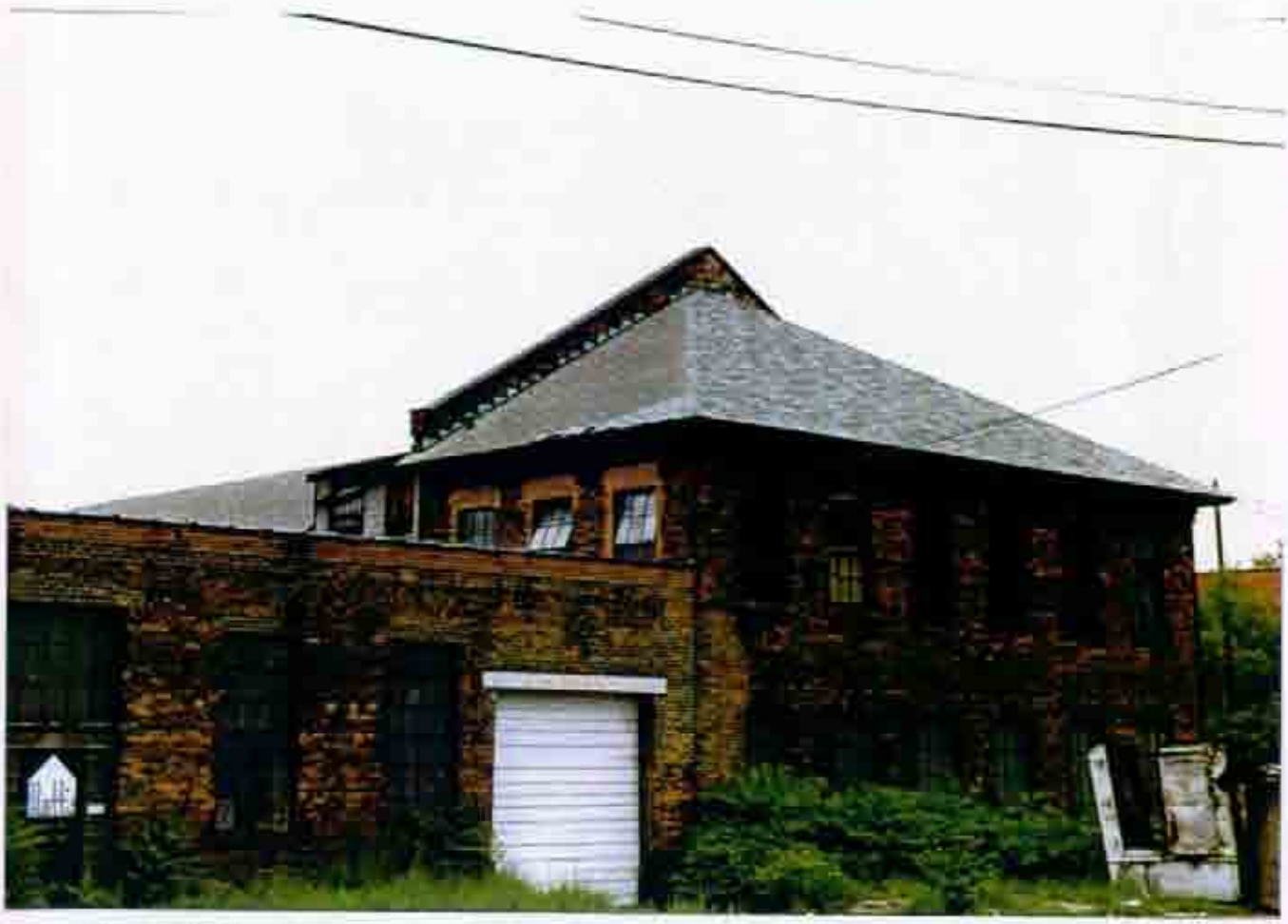


Figure 3.14
Detail of the east elevation of infill Bay 3 (to the left of Bay 4).

Figure 3.15
Detail of the wood partition and typical door, installed by the Williams Baking Company.

Figure 3.16
Detail of the mezzanine installed in Bay 1; this view looks north at windows that once looked out toward Bay 4, but were closed in when Bay 2 was added.

Figure 3.17
Detail, looking down the ramp, from the mezzanine past the windows at Bay 2, into Bay 3.

HAZARDOUS MATERIALS EXECUTIVE SUMMARY

Cocciardi & Associates, Inc. was contracted by Leung Hemmler Camayd, Architects (LHC) to provide environmental assessment of the Silk Mill building (Trolley Museum) at the Steamtown National Historic Site. An initial site assessment (Phase I) was performed during the fall of 1993. As a follow up, site testing (Phase II) was performed to quantify and identify regulated hazardous substances present on site to be disturbed during the construction and renovation of the building.

On April 28, 1994, a Final Report of quantified findings and cost estimates for Remedial Activities to occur at the Silk Mill building at Steamtown National Historic Site was provided to Leung Hemmler Camayd, Architects. This cost estimate was provided subsequent to both Phase I and Phase II environmental assessments provided on site. The following Environmental Remedial Activities were recommended on site for renovation of the building:

A. Asbestos Abatement: Asbestos abatement in the boiler areas and in various pipe runs throughout the building.

B. Lead Paint Abatement: Lead paint abatement within various rooms of the structure, including both cement and wooden materials (vertical and horizontal).

C. Avian Waste Materials: Avian waste abatement in one roof height room where bacteriological waste typical of harboring crypto/histoplasmosis causing agents was found.

D. Radon Mitigation: Radon mitigation within a sub-ground storage area.

E. Solid Waste Disposal: Solid waste disposals of various oils and regulated materials found throughout the building.

F. Residual Waste Disposals: Residual waste disposals of various oils and regulated materials found throughout the building.

G. Toxic Waste Disposal (PCBs): Disposal in compliance with the Toxic Substances Control Act of PCB containing light ballasts, which were to be drummed (approximately 6 drums) found throughout the site.

H. Hazardous Wastes: Disposal as hazardous waste of two items (characteristic waste).

The original cost estimate for environmental work was $125,845. A six percent increase was applied to the original estimate for work to be performed after January 1, 1995, and a subsequent seven percent increase was estimated as being applicable if the cost estimate were to be utilized after January 1, 1996.

On October 3, 1995, a revision to the cost estimate was performed using the applicable multipliers. The revised total for originally specified services (listed above) was $141,678. Additionally, at this time, a review of certain aspects of the project was performed. This review identified four areas which may allow for reductions in cost, if acceptable to the owner.

The new cost estimates were $96,234 for (changed) abatement recommendations as specified below:

A. Asbestos Abatement: Bulk tank insulation removal, soil removal and pipe lagging removal in various areas of the building, in particular in the former boiler room; (these are the same activities as originally identified in 1993.)

B. Lead Paint Abatement: Reduction in costs relative to lead paint abatement at the Silk Mill were provided if the following were to occur:

1. Provision of an air sampling pilot project to simulate manual demolition and the assumption that these activities would produce a negative exposure assessment (less than 30 micrograms / m^3 of Pb) and therefore eliminate the restrictive lead requirements for renovation activities. <u>This would increase costs by $2,880.</u>

2. Handling of the remaining lead with a trisodium phosphate or approved equal wash and encapsulation as opposed to paint removal, and subsequent management of lead paint in place. <u>This would yield a cost reduction of $21,202.</u> Subsequently, with the provision of a pilot project to simulate certain work activities and the management of other lead materials in place, cost for lead paint abatement may be reduced.

C. Avian Waste Materials: This area remains as specified and needs to be addressed.

D. Radon Mitigation: The selection, as specified, has been eliminated due to the elimination of the subslab room from the design specifications.

E. Residual and Solid Waste Disposal: Certain solid wastes have been removed from this site (plastics removed by the previous owner). Subsequently, reduced costs can be evidenced here.

F. Toxic Waste Disposal (PCBs): Six drums remain estimated for PCB waste disposal, as required.

G. Hazardous Wastes: Two items remain specified, Additionally, approximately nine other hazardous waste drums were noted on the site, and, if not removed prior to renovation activities, may increase this line item.

In summary, the current proposals for the Silk Mill building at the Steamtown National Historic Site include: on-site Asbestos Abatement; a pilot project concerning Lead Paint activities and management of certain Lead materials in place; the removal of Avian Waste materials and the subsequent qualification of same as sterile from the roof top room; disposal of Solid/Residual PCB-containing waste; and a minimum of two drums of Hazardous Wastes.

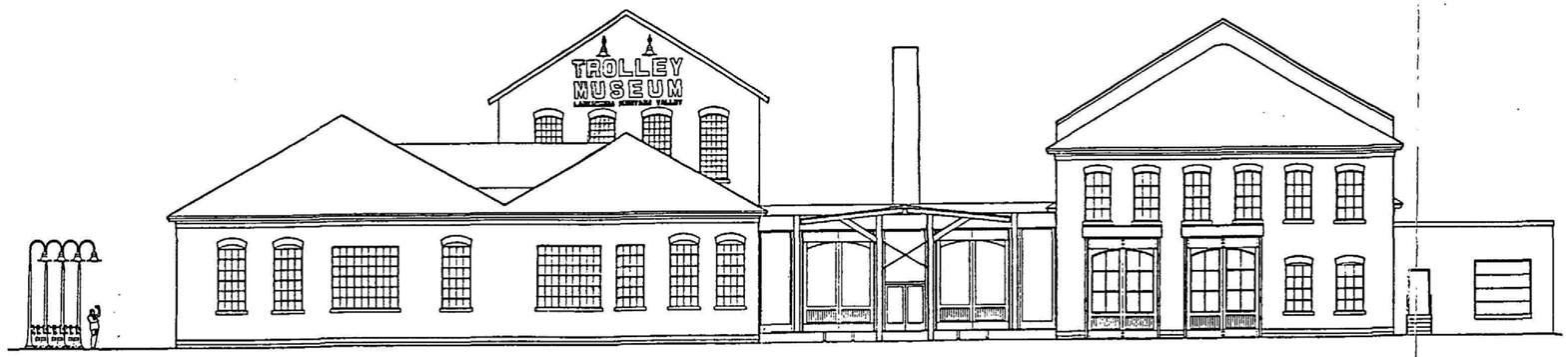
Current estimated cost for these activities is $96,234, estimated as of October 3, 1995. This figure does not include a proposal for $3,500 (estimated November 8, 1995) to provide a revision to current status of specifications, or site review and final inspection/report once remediation is accomplished. Additionally, in an effort to minimize costs, it does not provide for on-site monitoring of remedial contractors during actual abatement.

CERTIFICATION The information contained in this report is believed to be accurate and true to the best knowledge of the inspector(s). Findings and recommendations for this investigation are based on the observations of the conditions as they existed at that time. The inspector(s) and Cocciardi & Associates, Inc. assumes no liability for financial or health consequences due to actions or lack of actions taken by the client as a result of this inspection.

Joseph A. Cocciardi, MS, CSP
Cocciardi & Associates, Inc.

LACKAWANNA HERITAGE VALLEY TROLLEY MUSEUM

LACKAWANNA HERITAGE VALLEY AUTHORITY
701 WYOMING AVENUE
SCRANTON, PENNSYLVANIA 18503



95% DESIGN DEVELOPMENT SUBMISSION
JANUARY 19, 1995

LEUNG HEMMLER CAMAYD
A R C H I T E C T S
305 LINDEN STREET
SCRANTON, PENNSYLVANIA 18503

LANE FRENCHMAN & ASSOCIATES
38 CHAUNCY STREET
BOSTON, MASSACHUSETTES 02111

Borton Lawson Engineering
1460 Sans Souci Parkway
Wilkes-Barre, PA 18702

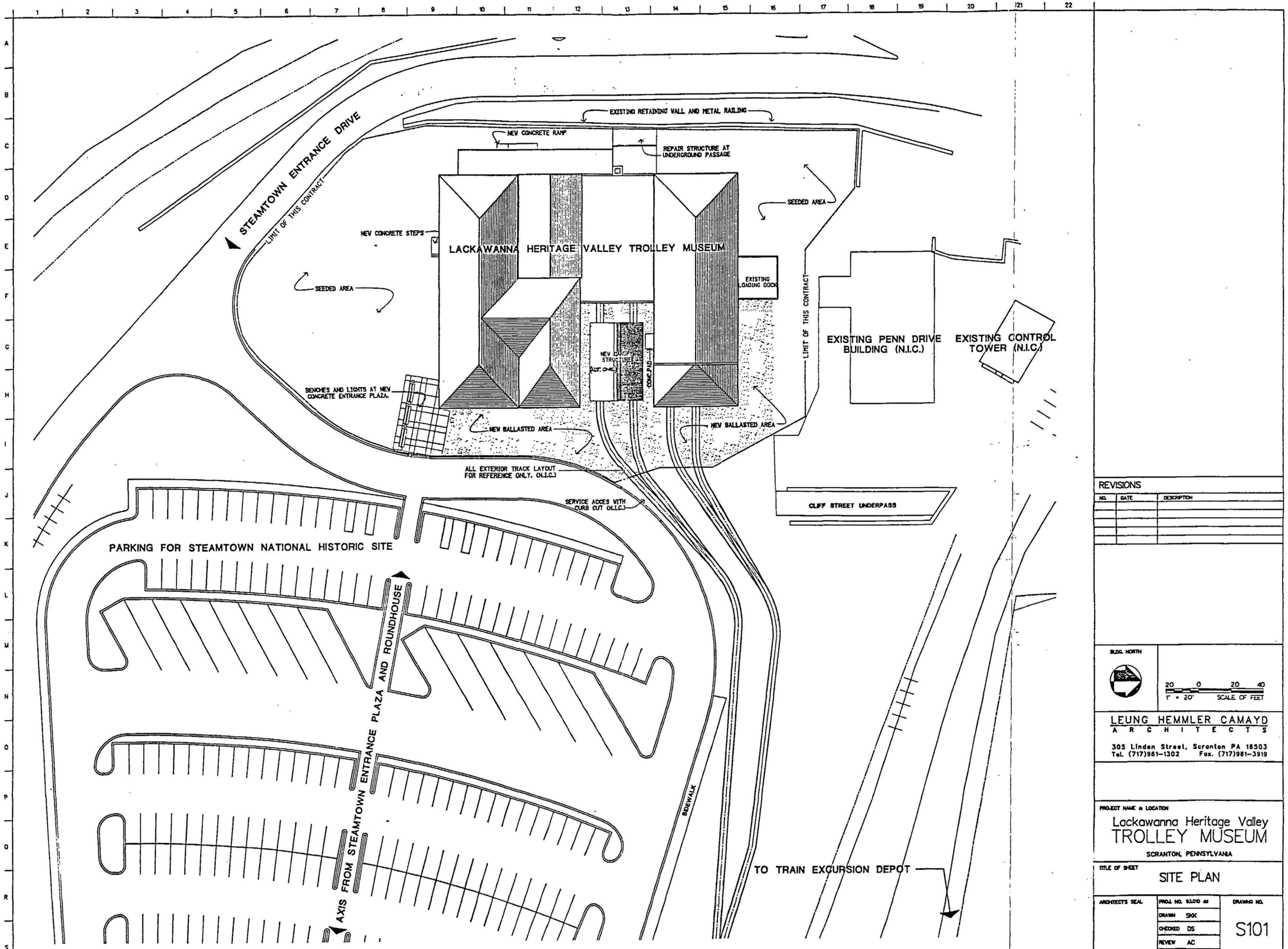
John Bowie Associates
330 West State Street
Media, PA 19063

Arthur Kaufman, CPE
Cost Estimating Services
2 Stanyon Road
York, PA 17403

LTK Engineering Services
Two Valley Square, Suite 300
512 Township Line Road
Blue Bell, PA 19422

J. Wayne Pratt
Landscape Architect
R. D. #2, Box 2421
Saylorsburg, PA 18353

Vincent Ciulla Design
525 Broadway Avenue
New York, NY 10012



REVISIONS

NO.	DATE	DESCRIPTION

BLDG. NORTH

20 0 20 40
1" = 20' SCALE OF FEET

LEUNG HEMMLER CAMAYD
A R C H I T E C T S
305 Linden Street, Scranton PA 18503
Tel. (717)961-1302 Fax. (717)961-3919

PROJECT NAME & LOCATION

Lackawanna Heritage Valley
TROLLEY MUSEUM
SCRANTON, PENNSYLVANIA

TITLE OF SHEET

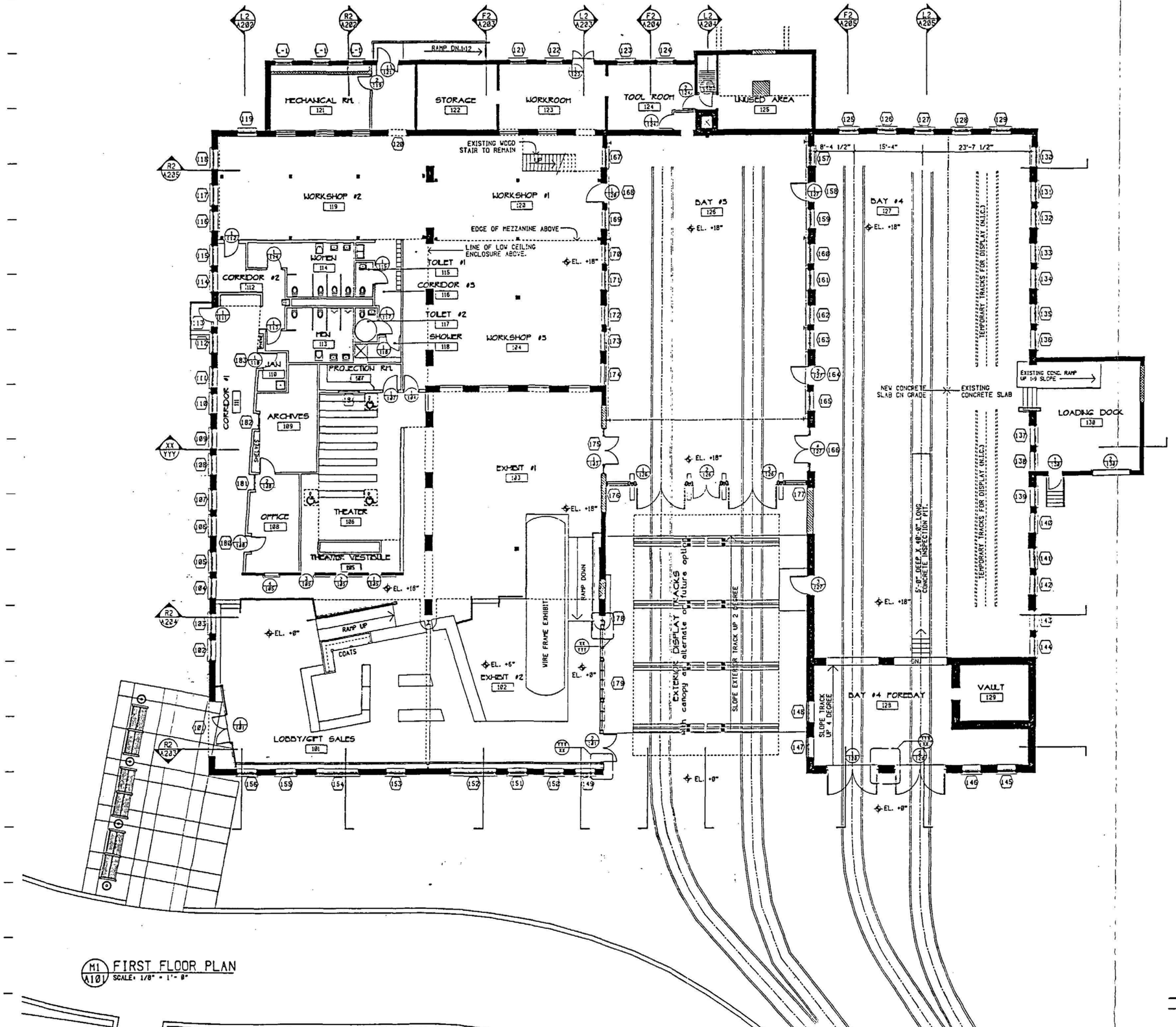
SITE PLAN

ARCHITECT'S SEAL

PROJ. NO. 93.070 dd
DRAWN SKK
CHECKED DS
REVIEW AC
DATE January 18, 1996

DRAWING NO.
S101

SHEET ___ OF ___



M1 / A101 FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

DENOTES EXISTING WALLS OR COLUMNS TO REMAIN.

DENOTES NEW CMU INFILL / PARTITION WALLS

DENOTES AREA OF NEW BRICK INFILL.

DENOTES NEW STUD PARTITION WALLS. SEE PARTITION TYPES FOR FURTHER DESCRIPTION.

REVISIONS

NO.	DATE	DESCRIPTION

BLDG. NORTH

8 0 8 16
1/8" = 1'-0" SCALE OF FEET

LEUNG HEMMLER CAMAYD
ARCHITECTS
305 Linden Street, Scranton PA 18503
Tel. (717)961-1302 Fax. (717)961-3919

PROJECT NAME & LOCATION
Lackawanna Heritage Valley
TROLLEY MUSEUM
SCRANTON, PENNSYLVANIA

TITLE OF SHEET
FIRST FLOOR PLAN

ARCHITECT'S SEAL	PROJ. NO. 93010 dd	DRAWING NO.
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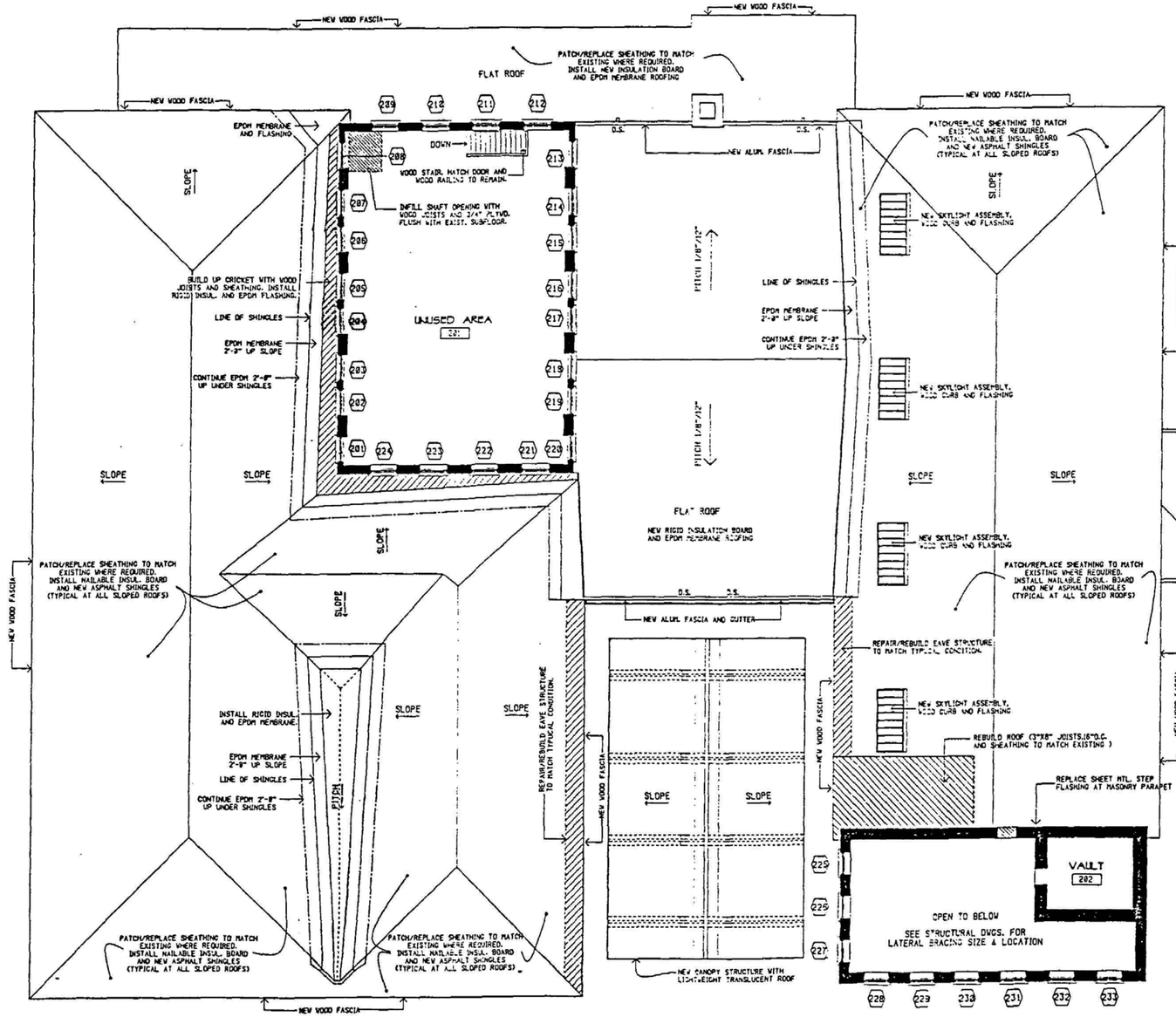
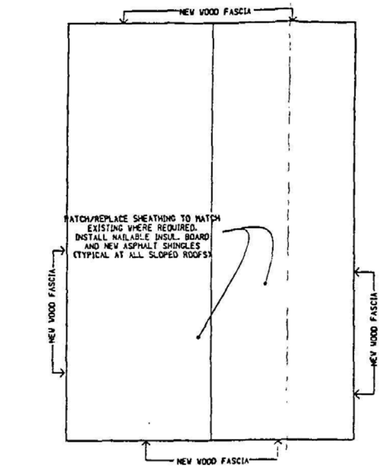
	CHECKED DS	
	REVIEW AC	
	DATE January 18, 1995	SHEET ___ OF ___



R1 A102 SECOND FLOOR AND ROOF PLAN
SCALE: 1/8" = 1'-0"



F18 A102 ROOF PLAN BAY TWO
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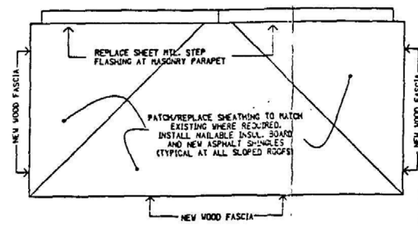


R18 A102 ROOF PLAN BAY FOUR
SCALE: 1/8" = 1'-0"

- DENOTES EXISTING WALLS OR COLUMNS TO REMAIN
- DENOTES NEW CMU INFILL / PARTITION WALLS
- DENOTES AREA OF NEW BRICK INFILL
- DENOTES NEW STUD PARTITION WALLS. SEE PARTITION TYPES FOR FURTHER DESCRIPTION
- DENOTES AREA OF ROOF RECONSTRUCTION/REPAIR. SEE NOTES FOR FURTHER DESCRIPTION.

REVISIONS

NO.	DATE	DESCRIPTION

BLDG. NORTH

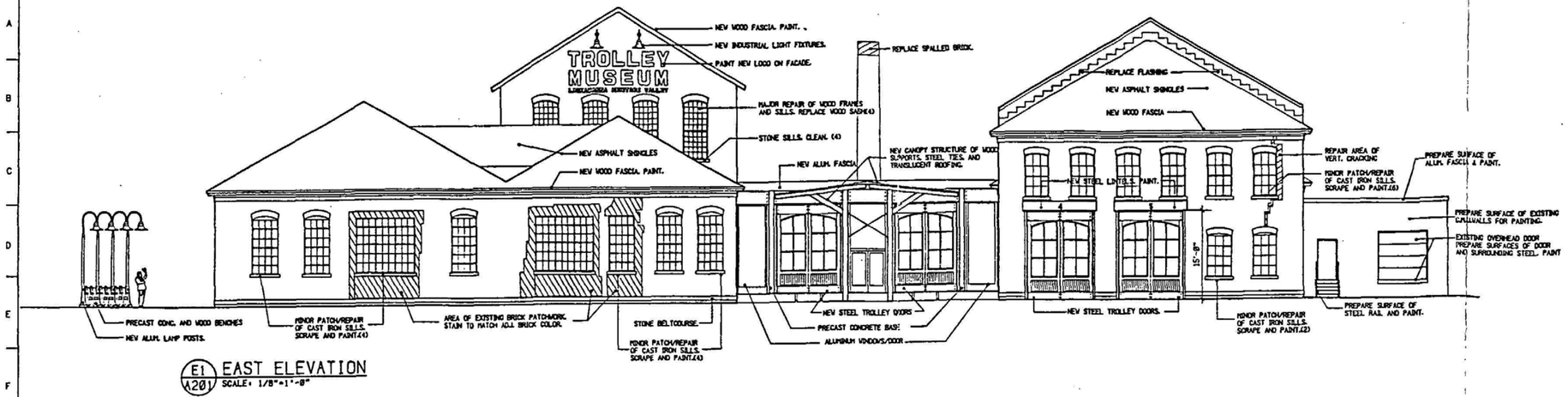
8 0 8 16
1/8" = 1'-0" SCALE OF FEET

LEUNG HEMMLER CAMAYD
A R C H I T E C T S
305 Linden Street, Scranton PA 18503
Tel. (717)961-1302 Fax. (717)961-3919

PROJECT NAME & LOCATION
Lackawanna Heritage Valley
TROLLEY MUSEUM
SCRANTON, PENNSYLVANIA

TITLE OF SHEET
SECOND FLOOR AND ROOF PLANS

ARCHITECTS SEAL	PROJ. NO. 9310 dd	DRAWING NO.
	DRAWN SKK	A102
	CHECKED DS	
	REVIEW AC	
	DATE January 18, 1996	SHEET ___ OF ___



E1 / A201 EAST ELEVATION
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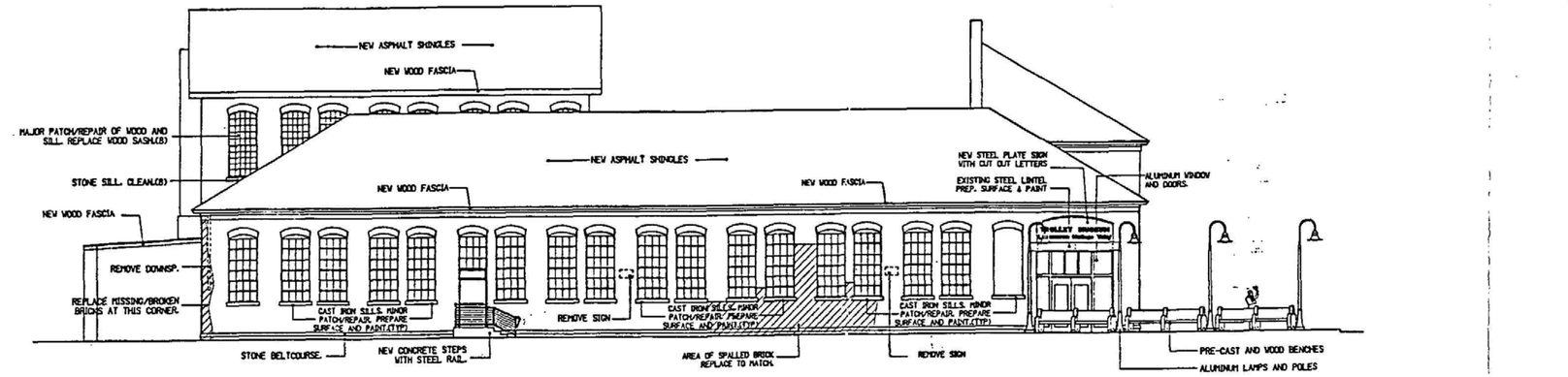
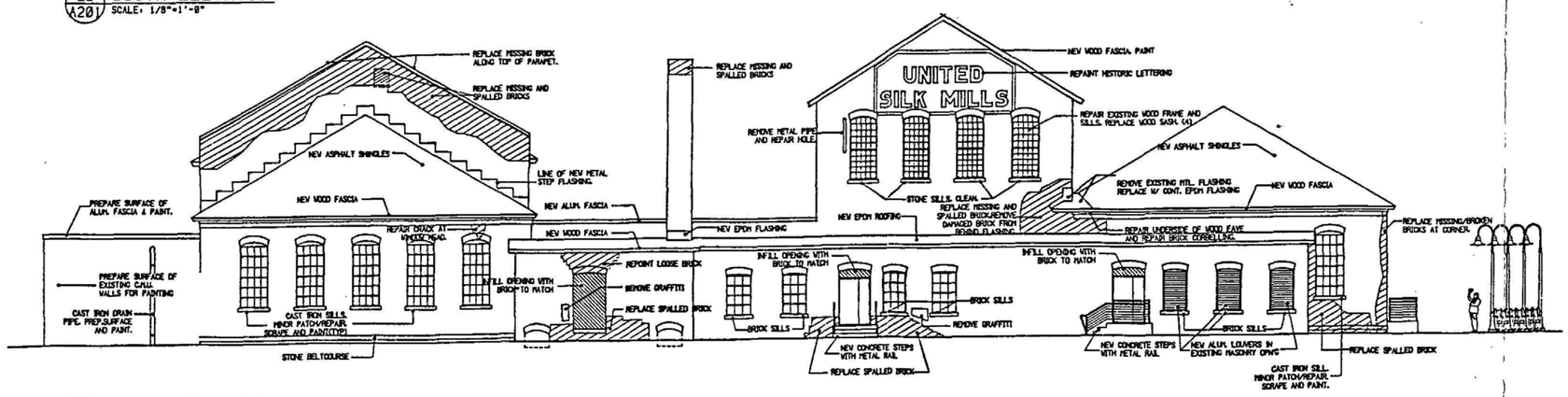


L2 / A201 SOUTH ELEVATION
SCALE: 1/8"=1'-8"



R1 / A201 WEST ELEVATION
SCALE: 1/8"=1'-8"

REVISIONS

NO.	DATE	DESCRIPTION

8 0 8 16
1/8" = 1'-0" SCALE OF FEET

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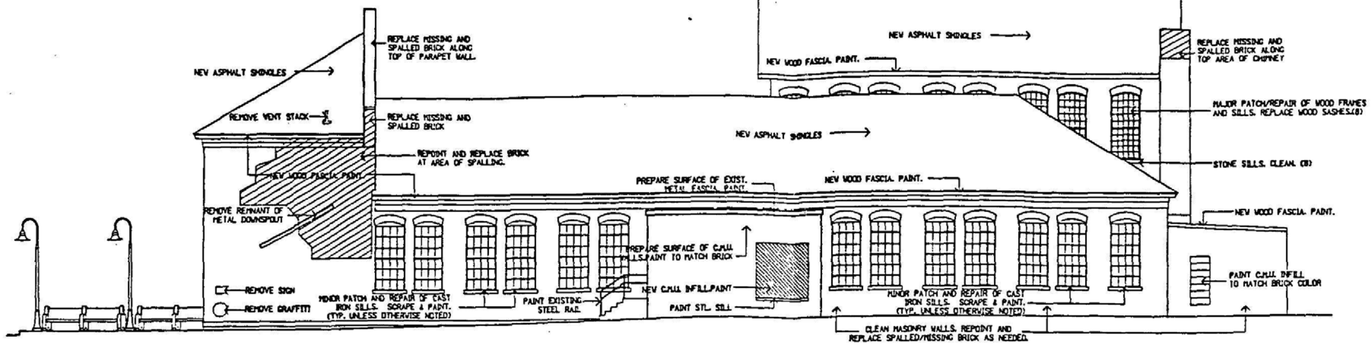
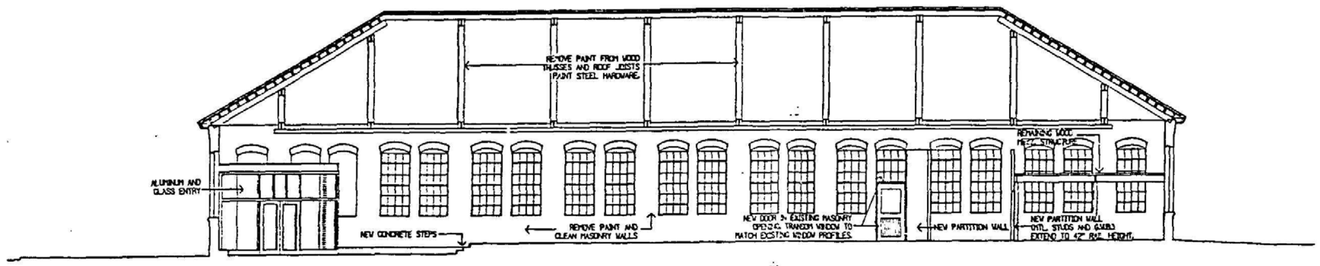
PROJECT NAME & LOCATION
Lackawanna Heritage Valley
TROLLEY MUSEUM
SCRANTON, PENNSYLVANIA

TITLE OF SHEET
BUILDING ELEVATIONS

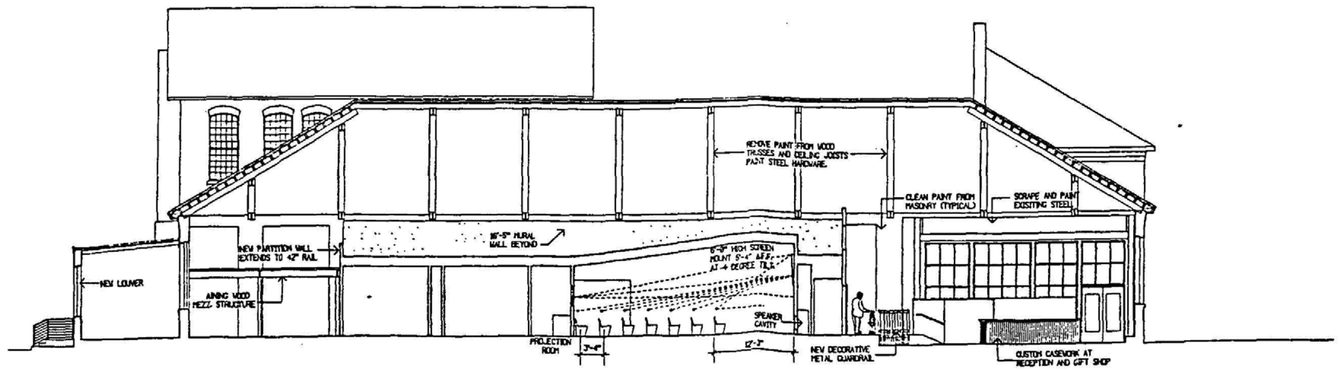
ARCHITECT'S SEAL	PROJ. NO. 93.010 dd	DRAWING NO.
	DRAWN SKK	A201
	CHECKED DS	
	REVIEW AC	
	DATE January 18, 1995	SHEET ___ OF ___



F2 / A202 NORTH ELEVATION
SCALE: 1/8"=1'-0"



L2 / A202 SECTION AT BAY ONE LOOKING SOUTH
SCALE: 1/8"=1'-0"



R2 / A202 SECTION AT BAY ONE LOOKING NORTH
SCALE: 1/8"=1'-0"

REVISIONS

NO.	DATE	DESCRIPTION

8 0 8 16
1/8" = 1'-0" SCALE OF FEET

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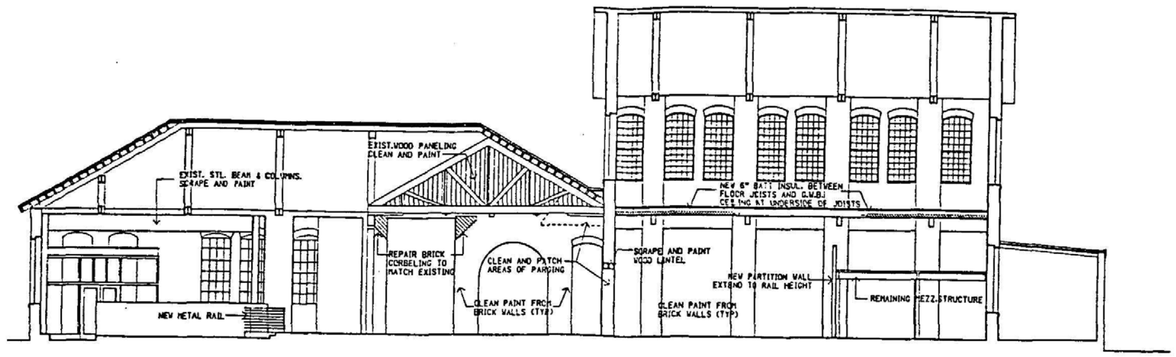
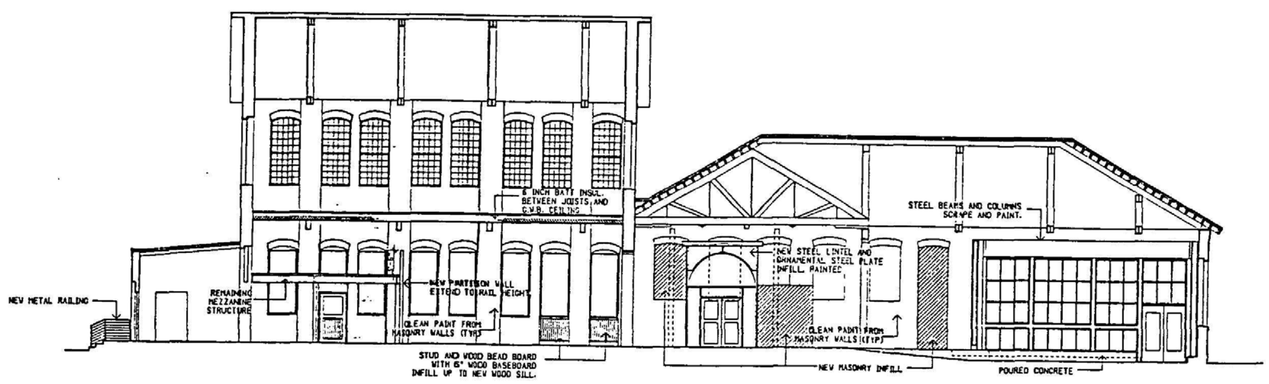
TITLE OF SHEET
BUILDING ELEVATIONS
BUILDING SECTIONS

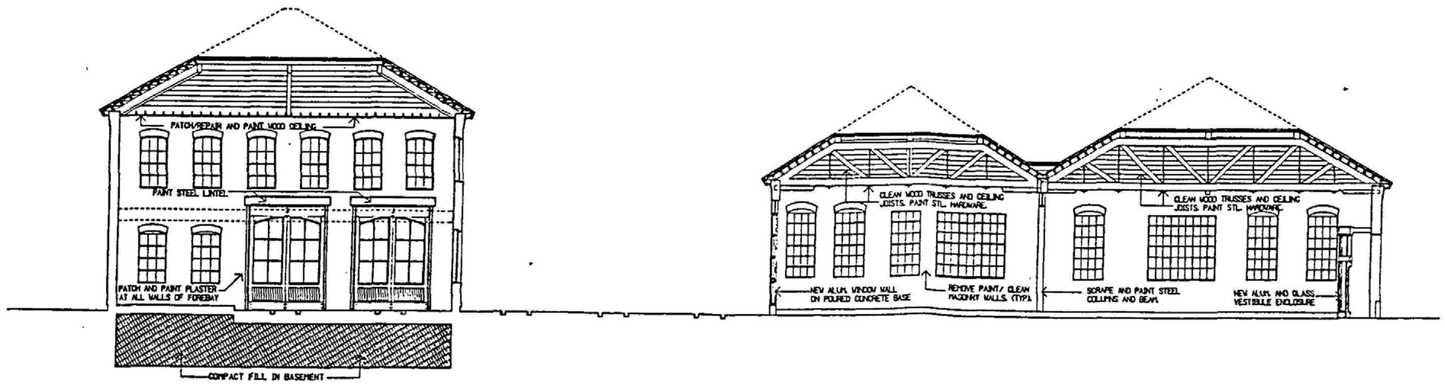
ARCHITECT'S SEAL		
	PROJ. NO. 93.010 d1	DRAWING NO.
	DRAWN SKK	A202
	CHECKED DS	
	REVIEW AC	
	DATE January 18, 1995	SHEET ___ OF ___



F2 / A203 SECTION AT BAY TWO LOOKING SOUTH
SCALE: 1/8"=1'-0"



L2 / A203 SECTION AT BAY TWO LOOKING NORTH
SCALE: 1/8"=1'-0"



BAY 4 BAY 3 BAY 2. BAY 1

R2 / A203 LONG SECTION LOOKING EAST
SCALE: 1/8"=1'-0"

REVISIONS

NO.	DATE	DESCRIPTION

8 0 8 16
1/8" = 1'-0" SCALE OF FEET

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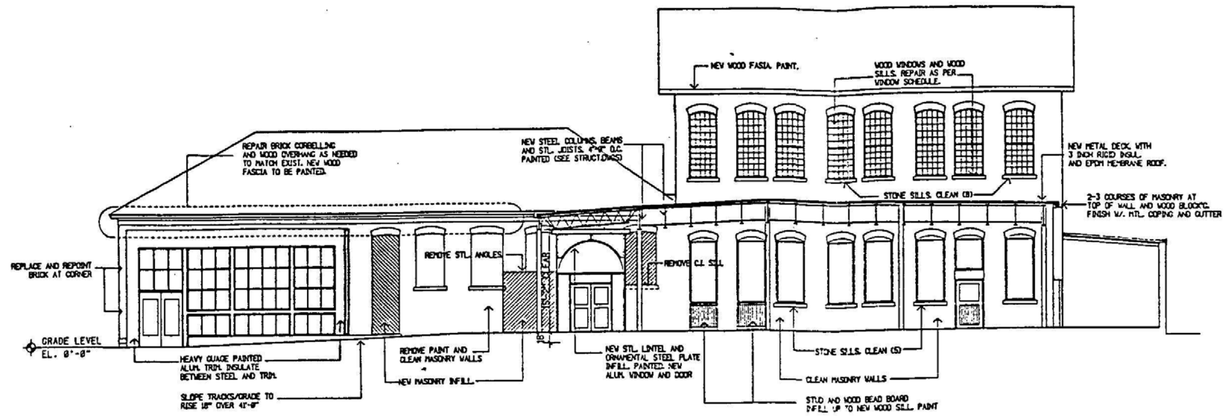
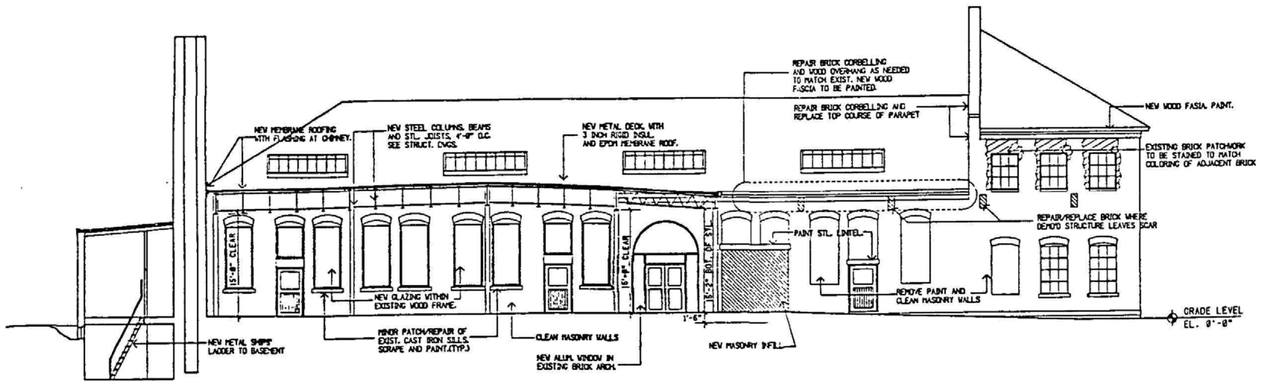
TITLE OF SHEET
BUILDING SECTIONS

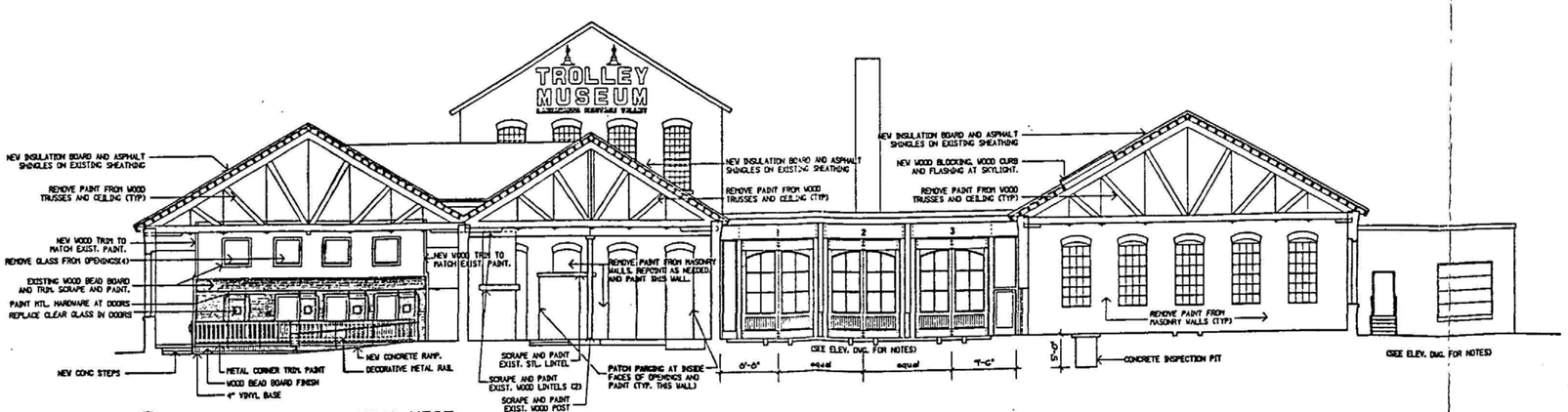
ARCHITECT'S SEAL	PROJ. NO. 93.010 dd	DRAWING NO.
	DRAWN SKK	A203
	CHECKED DS	
	REVIEW AC	
	DATE January 18, 1995	SHEET ___ OF ___



F2 / A204 SECTION AT BAY THREE LOOKING SOUTH
SCALE: 1/8"=1'-0"



L2 / A204 SECTION AT BAY THREE LOOKING NORTH
SCALE: 1/8"=1'-0"



R2 / A204 LONG SECTION LOOKING WEST
SCALE: 1/8"=1'-0"

REVISIONS

NO.	DATE	DESCRIPTION

8 0 8 16
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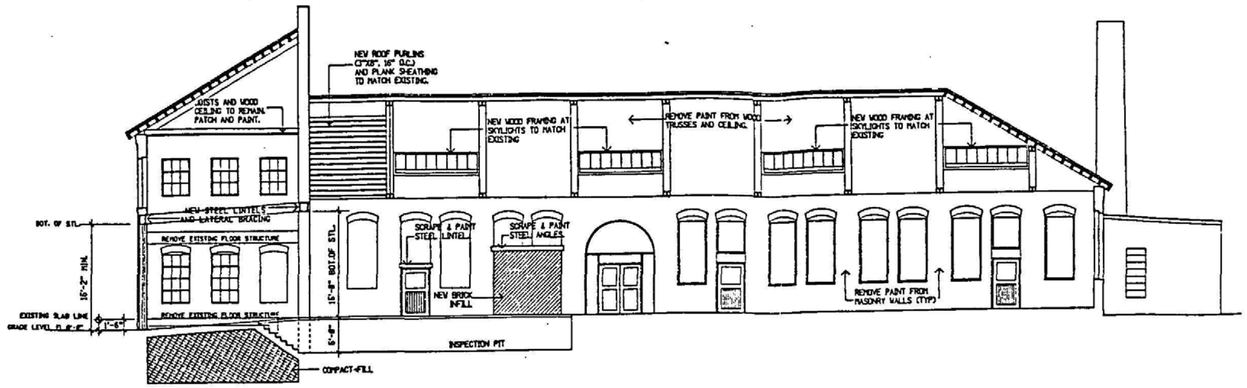
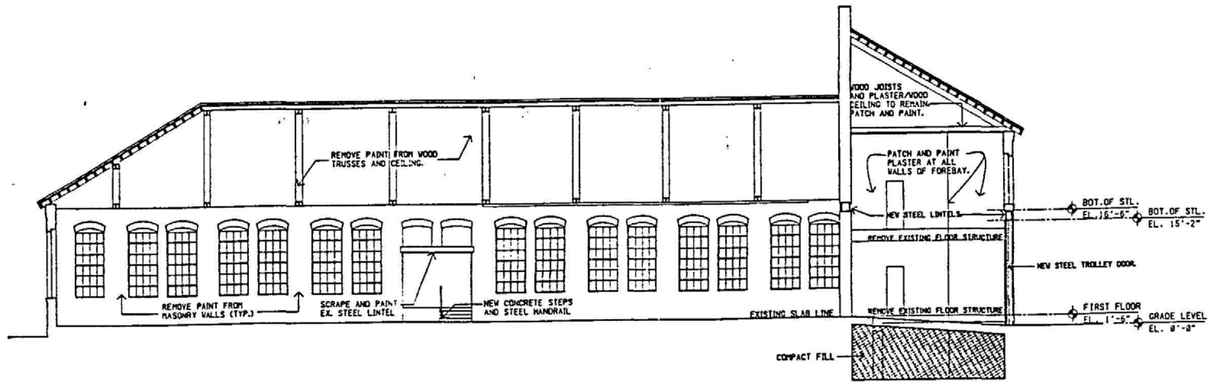
TITLE OF SHEET
BUILDING SECTIONS

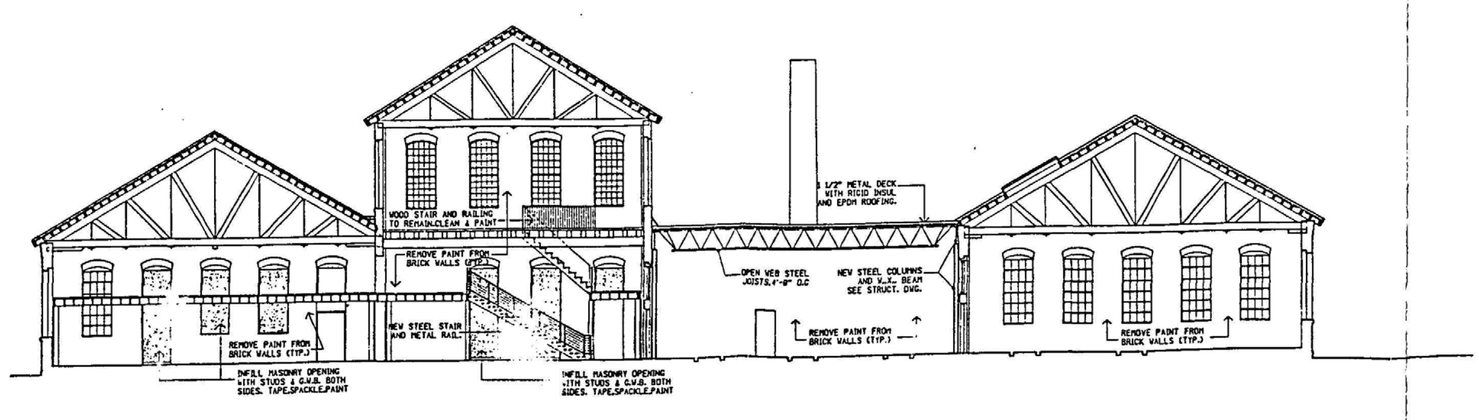
ARCHITECT'S SEAL	PROJ. NO. 93.010 dd	DRAWING NO.
	DRAWN SKK	A204
	CHECKED DS	
	REVIEW AC	
	DATE [redacted], [redacted] January 16, 1998	SHEET ___ OF ___



F2 / A205 SECTION AT BAY FOUR LOOKING SOUTH
SCALE: 1/8"=1'-8"



L2 / A205 SECTION AT BAY FOUR LOOKING NORTH
SCALE: 1/8"=1'-8"



R2 / A205 LONG SECTION LOOKING WEST
SCALE: 1/8" = 1'-8"

REVISIONS

NO.	DATE	DESCRIPTION

8 0 8 16
1/8" = 1'-0" SCALE OF FEET

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TITLE OF SHEET
BUILDING SECTIONS

ARCHITECT'S SEAL	PROJ. NO. 93.010 dd	DRAWING NO.
	DRAWN SKK	A205
	CHECKED DS	
	REVIEW AC	
	DATE January 18, 1996	SHEET ___ OF ___