NPS Form 10-900 OMB No. 1024-0018
(Rev. 10-90)

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES REGISTRATION FORM

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Beaman and Smith Company Mill

other names/site number

2. Location

street & number 20 Gordon Avenue ☐ not for publication

city or town Providence ☐ vicinity

state Rhode Island code RI county Providence code 007 zip code 02907

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this ☒ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ☒ meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant ☐ nationally ☒ statewide ☐ locally. (☐ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

Rhode Island Historical Preservation & Heritage Commission
State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is: Signature of the Keeper Date of Action

- ☐ entered in the National Register
  - ☐ See continuation sheet
- ☐ determined eligible for the National Register
  - ☐ See continuation sheet.
- ☐ determined not eligible for the National Register
  - ☐ See continuation sheet.
- ☐ removed from the National Register.
  - ☐ See continuation sheet.
- ☐ other (explain)

5. Classification

Ownership of Property
(Check as many boxes as apply.)

- ☒ private
- ☐ public-local
- ☐ public-State
- ☐ public-Federal

Category of Property
(Check only one box.)

- ☒ buildings
- ☐ district
- ☐ site
- ☐ structure
- ☐ object

Number of Resources within Property
(Do not include any previously listed resources in the count.)

Contributing	Noncontributing	
2		buildings
		sites
		structures
		objects
2	0	total

Name of related multiple property listings
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

N/A

6. Function or Use

Historic Functions
(Enter categories from instructions.)

INDUSTRY: manufacturing facility

Current Functions
(Enter categories from instructions.)

VACANT

7. Description

Architectural Classification
(Enter categories from instructions.)

OTHER: late 19th-early 20th century industrial

Materials
(Enter categories from instructions.)

foundation CONCRETE
walls BRICK
CONCRETE
roof ASPHALT
other METAL:steel
GLASS

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

☒ **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.

☐ **B** Property is associated with the lives of persons significant in our past.

☒ **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

☐ **D** Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

☐ **A** owned by a religious institution or used for religious purposes.

☐ **B** removed from its original location.

☐ **C** a birthplace or grave.

☐ **D** a cemetery.

☐ **E** a reconstructed building, object, or structure.

☐ **F** a commemorative property.

☐ **G** less than 50 years of age or achieved significance within the past 50 years

Areas of Significance
(Enter categories from instructions.)

ARCHITECTURE
INDUSTRY

Period of Significance

1898, 1917

Significant Dates

1898, 1917

Significant Person

N/A

Cultural Affiliation

N/A

Architect/Builder

Berlin Iron Bridge Company

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

☐ preliminary determination of individual listing (36 CFR 36) has been requested
☐ previously listed in the National Register
☐ previously determined eligible by the National Register
☐ designated a National Historic Landmark
☐ recorded by Historic American Buildings Survey #
☐ recorded by Historic American Engineering Record #

Primary location of additional data:

☐ State Historic Preservation Office
☐ Other State Agency
☐ Federal agency
☐ Local government
☐ University
☐ Other
Name of repository

10. Geographical Data

Acreage of Property 0.9 acres

UTM References
(Place additional references on a continuation sheet.)

	Zone	Easting	Northing
1	1 9	2 9 9 1 4 2	4 6 3 1 1 0 0
2			
3			
4			

☐ See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Edward Connors, Principal

organization Edward Connors and Associates date September 2005

street & number PO Box 154522 telephone 401 595-0699

city or town Riverside state Rhode Island zip code 02915

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name

street & number telephone

city or town state zip code

DESCRIPTION

The Beaman and Smith Company Mill is two attached industrial buildings located at Gordon and Saratoga Avenues on a 1-acre lot in a densely-settled industrial and residential district on the south side of Providence.

Building 1
20 Gordon Avenue (1898, contributing)

Building 1 is a 1- and 2-story steel frame building, 250' x 80', with brick curtain walls and a shallow end-gable roof. The building was designed and built by the Berlin Iron Bridge Co. (Berlin, CT) in two stages. The original construction, which forms the western part of the present building, is 130' long and 60' wide. It is composed of a two-story section with a single-story, shed- and flat-roofed extension on the north elevation. The west end of the one-story section is steel frame; this section was originally L-shaped, but the narrow 30'-long part on the west end was removed after 1976 to accommodate a transformer pad. The east end of the one-story section is a brick structure built to house storage and a boiler room. Beaman and Smith enlarged the plant two years after the initial construction with a two-story, rear (east) extension, which nearly doubled the size of the plant.

The building rests on granite footings (visible along the Gordon Street façade) and it has a concrete ground floor. The interior framing is exposed, with riveted box girders with one open lattice side for the principal uprights, rolled I-beams for the longitudinal floor beams and riveted, built-up I-beams for the joists. The posts on the first floor also include 6" round, steel columns that were apparently added later. The majority of the building is three aisles wide, divided by two rows of posts, though it widens to four aisles, then narrows to two aisles at the west end. On the second floor, the roof is carried on steel trusses with no interior columns. The flooring is heavy wood plank on timber joists resting on steel floorbeams. Finish flooring is found toward the front of the building in the location of the former pattern room.

The curtain walls consist of a brick knee wall surmounted by a continuous band of frame windows. The outer edges of the steel framing members are visible on the exterior walls of the building, forming an attractive pattern of steel frame and brick fill. The windows are paired, wood-frame, double-hung units, with 12/12 sash predominantly, on the first floor and on the second floor, west elevation. The side elevation on the second floor has 6/9 sash predominantly. Although most original windows survive, a number of window openings are now cement block- or plywood-filled. The end-gable roof has a molded cornice and two box monitors running almost the entire length of the building. While the roof on the west end is symmetrical, on the east end the northern slope is elongated to accommodate the greater width.

The four-bay façade on Gordon Avenue has been altered from its original appearance. A 1901 illustration of the building (Figure 5) shows a double door to the right of the centerline of the building. A brick curtain wall is now in this location. The doorway is now on the left side of the façade, surrounded by recent concrete block infill. Concrete block was also used to fill in the openings created by the post-1976 removal of the one-story wing on the northwest corner. The remaining first floor windows in the west elevation are filled with plywood. On the second floor, however, original windows survive along with a double 5-panel, wood door used for rigging of machinery.

The second floor served as a pattern shop (front) and machine shop (rear). A large, first floor erecting room was served by an electrical overhead crane.

The 1-story brick, 80' x 20' wing on the north served for steel storage (west section) and a boiler room (east section) for the plant's heating system. Unlike the rest of the building, this section was built with brick load-bearing walls and rectangular window openings with quarry-faced granite lintels and sills. It is possible that Beaman and Smith chose this type of wall construction to address the possibility of a boiler explosion—a conservative response to a new building technology that provided relatively thin brick walls in the rest of the plant.

A shallow-gable, 1-story brick addition extends from the rear of the building. This appears to have been constructed as infill, providing communication between the main plant and a 3-story, wood-frame pattern storage building demolished after 1951. This storage building (visible in the rear of Figure 5) once occupied the entire width of the property between Reynolds and Saratoga Streets.

A series of 20" I-section rolled beams[i] running the length of the second-story north and south walls provides the framework for a traveling electrical crane found now at the open, deep single-story rear of the building. A standard railroad rail is attached to the top edge of these beams, allowing movement of the crane. These beams rest on wedge-shaped steel brackets tied into the frame of the building by ¼" riveted steel plate. An interior wall of relatively recent construction and two cuts[ii] in the length of the beams would now prevent this crane from moving along its original path. A much smaller traveling crane and hoist of unknown date is found along the south wall at the second floor. This crane is mounted above an opening in the floor (now covered) which allowed hoisting of material or equipment between floors.

A roughly 20' length of group-drive shafting with pulleys and leather belting is found at the second story north wall. This assembly, likely surviving from the construction of the building, suggests that Beaman and Smith's transition from group to individual electric drive was incremental (rather than completed in the move from

Westfield Street to Gordon Avenue).[iii] This assembly also includes a boxed enclosure over a hole in the floor that allowed a belt to pass from the second to the first floor.

Building 2
20 Gordon Avenue (1917, contributing)

Building 2 is a narrow, four-story, 40' x 140', reinforced concrete building attached to the south wall of Building 1. This is an early example of flat-slab concrete construction, a departure from the earliest forms of concrete building construction that drew from the column, beam, and girder structural systems of steel framing. While these buildings were strong, much space was lost in the depth of the members comprising the floor and ceiling system. C.A.P. Turner's flat-slab construction technique (see Significance section) necessitated only columns with flared capitals (called "mushroom" columns) and a heavily reinforced concrete slab floor.

This building consists of two bays along the Gordon Street façade and nine bays along its side. Buildings of this type typically employed a concrete frame with exposed brick curtain walls and steel-frame windows. The only exposed brick on this building is at the rear elevation. Elsewhere, the brick curtain wall appears to have been stuccoed, a repeating visual pattern in the stucco suggesting the brick below the surface.[iv]

The roof is flat with a molded concrete cornice on all elevations except the rear. This cornice has a simple concrete bracket at the corner piers.

Windows are typically 78-light (13 wide by 6 high), rectangular, steel-frame with 4- or 8-light hoppers. Some side elevation windows are 54-light (9 wide by 6 high). Windows on the first floor are filled with plywood. On the rear (east) elevation are paired, wood- windows, with 9/9 double-hung sash.

An office occupied the front section of the first floor (likely eliminating the ground floor office in Building 1). The remainder of the first floor and the second floor served as machine shops. The third floor was used for storage; the fourth a drafting room. The interior concrete stairwell on the north elevation is lined with what appears to be square firebrick.

The mushroom columns of the north wall of Building 2 were poured around and integrated into the steel columns forming the south wall of Building 1, the open lattice of the latter still exposed in the flattened face of the mushroom column. Passage between Buildings 1 and 2 was provided by cuts made through the south wall of Building 1.

SIGNIFICANCE

The Beaman and Smith Company Mill exemplifies the industrialization of South Providence and the national role of Providence-area precision machine manufacturers. Before the formation of the partnership, principals Elmer Beaman and George Smith had served in administrative and technical capacities at Star Tool and Brown & Sharpe respectively. Smith had been chief draftsman at Brown & Sharpe, an international standard-setting manufacturer of precision measuring instruments and metalworking machinery. They established the partnership of Beaman and Smith in 1886, leasing space in a wood-frame, steam powered industrial building. By 1898 the expanding market for their precision large-scale boring and milling equipment as well as their specialty in adapting direct electric drive to metalworking machinery led them to contract with Berlin Iron Bridge Company to build a large, steel-frame machine shop (Building 1) powered and illuminated by electricity. Beaman and Smith was one of the first electrically-powered factories in Rhode Island. The company expanded the factory in 1917, building a four-story, reinforced concrete flat-slab structure (Building 2, 1917) connected to the 1898 building.

Further, the Beaman and Smith Company buildings are significant as early examples of both steel-frame and reinforced concrete industrial buildings. Building 1 was designed and fabricated by a regional iron bridge maker that expanded into steel building construction in the early 1890s. This building also represents a very early use of direct drive electrical power and electrical illumination. Building 2 is a good example of the mushroom column and slab floor characteristic of C.A.P. Turner's designs. As a pair, the Beaman and Smith buildings represent early examples of industrial structural and material innovation that permitted great strength, rapidity in construction, versatility, and a significant increase in natural lighting.

History

Early in the American industrial revolution, Providence established itself as a center for the design and manufacture of machine tools. The beginnings of this commerce can be traced to early innovation in the design and repair of textile machinery. As historian Gary Kulik has pointed out,

> Between 1850 and 1860, the number of metal working firms in Providence grew from twenty-five to ninety-four, while the industry's capital base increased from $474,000 to $2,977,000. Only Pawtucket, with numerous small shops, was a rival, but Providence far exceeded Pawtucket in amount of capital, number of workers, and value of production. Steam engines, machine tools, textile machinery, screws, files, and jewelry were Providence's primary products. This growth was the result of Providence's central location for the receipt of raw materials and the transport of finished goods by both sea and rail, and the spin-off effects of the textile industry, both in its demand for machinery and steam engines, requiring ever

more versatile and complex machine tools, and in its creation of learning opportunities for skilled machinists and metal-workers.[v]

Elmer A. Beaman and George H. Smith formed a partnership in 1886 for the manufacture of precision machine tools (Figure 1). A year later they leased manufacturing space in Providence and, from 1887 to 1898, the company built a national clientele, specializing in the manufacture of large-scale, specialty milling and boring machines and the attachment of direct-drive electric motors to this machinery. Twelve years later the company was incorporated. In 1898, Beaman and Smith contracted with the Berlin Iron Bridge Company in Berlin, Connecticut, to design and construct a highly innovative industrial plant, incorporating steel-frame construction and the use of electricity for motive power and lighting.

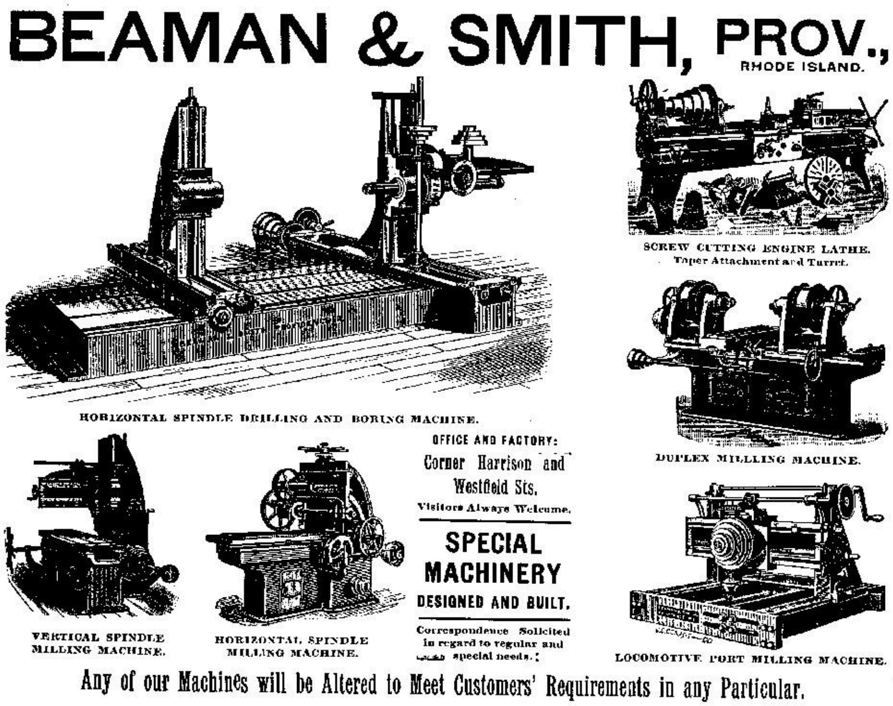


Figure 1
Beaman and Smith advertisement, *Board of Trade Journal* (ca 1890)

Elmer Allen Beaman (1846-1921) was born in Worcester, MA. In 1853 he moved west, joining his father at age fourteen in prospecting for gold in the Rocky Mountains. During the Civil War he served in the 42nd

Massachusetts Regiment and was discharged in 1863.[vi] He returned to Worcester where he learned the machinist's trade, relocating to Providence in 1866 where he found employment with Star Tool Company. He was associated with this company for a number of years, eventually becoming treasurer. George H. Smith (1851-1934) was born in New Britain, CT. At age 27, he went to work for Brown and Sharpe as a draftsman. Within a year of accepting this position he was made the company's chief draftsman, a position he held for eight years. At that time (1886) he resigned from Brown and Sharpe to form the partnership with Beaman. The company set up shop in leased space in the newly-built Charles Perkins Building, a frame, steam-powered industrial building in south Providence.

Significant innovations in the design and manufacture of direct current motors were taking place and discussed widely in the technical press of the 1890s. Although constrained by the machine layout, shafting, and belting typical of a 19th-century steam-powered factory, Beaman and Smith developed a specialty in the application of direct electrical drive to the machinery designed and produced in their first plant (Figure 2).

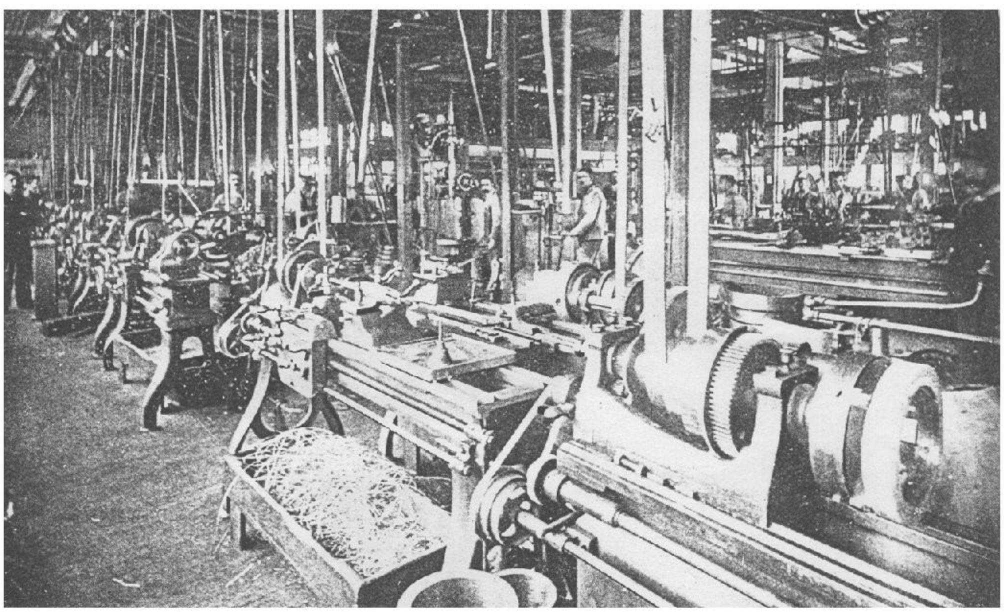


Figure 2
Halftone from *Board of Trade Journal* (April 1894) showing machinery and group drive shafting and belting at Beaman and Smith's first machine shop at Westfield Street (1887-1898).

It is likely that Beaman and Smith's experience with the benefits and practicality of electric drive--combined with the high rate of electrical innovation in the 1880s and 1890s--made a powerful case for a new plant. Little is known about the early 20th-century output of Beaman and Smith. The company's 1893 "B" catalog shows seven specialty milling machines, four drilling and boring machines, two boring machines, and two engine lathes.[vii]

Electrical lighting and power at Beaman and Smith

The evidence to date is circumstantial as to the nature of any arrangement Beaman and Smith had for the provision of electrical power to their plant. Notations on the 1900 Sanborn Fire Insurance Map of Providence show that the plant was powered and illuminated by electricity—the notation, however, failed to cite the source of that power.[viii] The plan of the earliest building (roughly half the area of the present plant, see Figure 3) shows a boiler room with a single boiler but no engine room. Power for the earlier Beaman and Smith plant was provided by two coal-fired boilers and an engine room.[ix] Although there are no articles in the *Board of Trade Journal* about a power arrangement between Beaman and Smith and the Narragansett Electric Lighting Company, a 1907 article in this journal described in some detail a later arrangement for the furnishing of power to the new plant of Providence Lithograph,[x] immediately south of Beaman and Smith. Narragansett Electric worked closely with Providence Lithograph to convert to direct electrical drive the group drive equipment moved from their former location.[xi] While this article points out that Providence Lithograph used 500 VDC motors, there is no description of the nature of the current furnished by Narragansett Electric to the plant. It can be assumed, however, that a local system requiring rectification of alternating to direct current would have warranted mention in this article. The utilization of 500 VDC motors in the neighboring plant of Providence Lithograph nine years after Beaman and Smith's 1898 electrical installation, suggests that this plant might have operated on direct current, possibly drawn from the Union Company's growing network of electric traction lines. The first 600 VDC trolley line in Providence was run from downtown via Broad Street to Pawtuxet in 1892. This line passed within a few blocks of Beaman and Smith.[xii]

Capitalized at $100,000, Beaman and Smith Company incorporated in 1898. In the same year the company entered into a contract with the Berlin Iron Bridge Company for the construction of an industrial building on Gordon Street in South Providence (Figure 3). This plant represented two areas of turn-of-the-century technical innovation: electrical power and steel-frame construction.

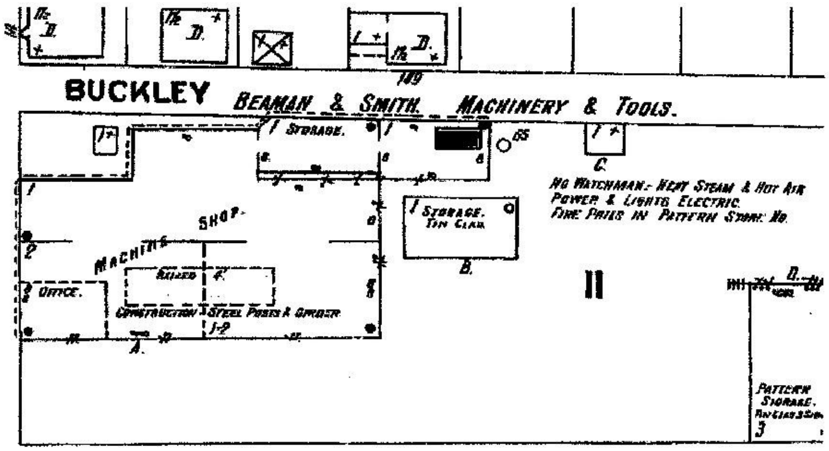


Figure 3
Original footprint of Beaman and Smith (1898 to 1900) showing 1- and 2-story, 128' x 60' building.
The storage and boiler rooms on Buckley Street were built with traditional, load-bearing brick walls.
Note: Buckley St. is now Saratoga St.

The Berlin Iron Bridge Company

By the 1830s wrought iron elements had been introduced into American timber truss bridge design. As the 19th century progressed, more and more elements of truss bridges, traditionally composed of heavy frame members, were substituted with cast and wrought iron. By the post-Civil War period, New England metal bridge works such as the Berlin Iron Bridge Company (CT), D.H. Andrews' Boston Bridge Works (MA), and the James H. Tower Company (RI) began exploiting this market.

In the introduction to his *Directory of American Bridge-Building Companies*, Victor Darnell describes the transformation of bridge-building from a craft dominated by itinerant masters to a highly-developed industry:

> [Iron bridges] required foundries and fabricating shops to form, drill, assemble, and rivet the pieces before shipment. This off-site work in turn necessitated designs, drawings, and obtaining the materials from rolling mills and other suppliers. These new activities marked the progression from a craft to an industry.[xiii]

A number of factors contributed to the rise of regional metal bridge fabricators in the post Civil War years. These included the expansion of the national railway system and the consequent need for standardized bridge designs that could be constructed rapidly, as well as the occurrence of several widely-publicized iron rail bridge failures and the consequent professionalization of civil engineering. Added to these influences was the increased availability of high-strength steel in the 1880s, made possible by the Bessemer and open hearth steel processes invented and perfected in the pre-Civil War years.

As recounted by Connecticut industrial historian Bruce Clouette, the Berlin Iron Bridge Company

> …began as an offshoot of the tinware industry, which since the late 18th century had been centered around the town of Berlin. The firm of Roys and Wilcox, an East Berlin maker of tinners' tools and other metal-forming mechanisms, set up a separate company in 1868… The enterprise was not particularly successful until a new investor in 1877, S.C. Wilcox, realized that the plant had the capacity to manufacture highway bridges. The following year, the Corrugated Metal Company [as it was known] purchased rights to William Douglas's patented "parabolic" truss and produced the first of the lenticular bridges that would soon dot the landscape of the Northeast. Douglas, educated at West Point, joined the company as treasurer and executive manager and continued to refine his design; he was awarded a second patent in 1885, by which time the company had changed its name to the Berlin Iron Bridge Company.[xiv]

From the fabrication of bridge and roof trusses and the rolling of corrugated steel, it was an obvious step for Berlin to consider the design and construction of entire industrial buildings. By 1891 the company letterhead listed "Iron Bridges, Iron roofs, Iron Buildings."[xv] Berlin's first Rhode Island building and the first steel-frame industrial structure in Providence was erected in 1893 for the Fuller Iron Works (Figure 4). This machine shop, built as an extension to an earlier 1865 brick building, was described in 1901: "…the object of this steel structure with glass upon three sides being to provide perfectly diffused light through the heavy-ribbed glass that was used."[xvi]

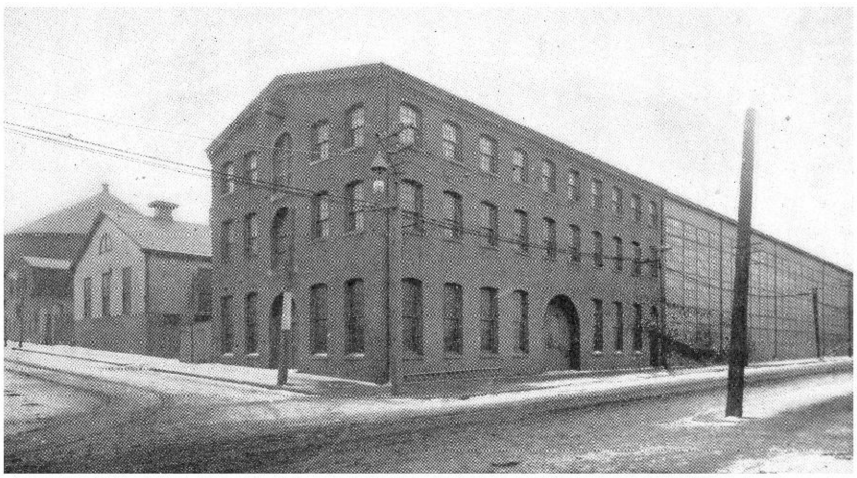


Figure 4
Brick original wing of Fuller Iron Works (1865) in foreground,
steel-frame and glass wing (1893) built by Berlin Iron Bridge Co. at rear. 1901 photo.
Although now clad in asbestos shingle, this Berlin building survives on Peck Street, Providence

Information drawn from the *Board of Trade Journal* and an undated Berlin catalog (ca 1895) provides a list of at least nine buildings constructed in the Providence-area[xvii].

Promotional copy from the Berlin catalog made a convincing case for the economy and utility of metal-frame buildings:

> If some of our manufacturers occupying old works would keep accurate account for a year of the expense of repairs on their whole plant, they would find that this expense would easily pay the interest on a good iron and brick building. In the construction of new plants, new, modern ideas prevail. It is very difficult at the present time to obtain lumber suitable for buildings without great expense, and even when lumber of a quality suitable for building purposes is obtained and the building constructed, the lumber soon shrinks or swells so much that it throws the shafting out of line, causes unpleasant vibrations in the building, and the traveling crane to vibrate in its course back and forth through the shop-often worse results.[xviii]

J.P. Morgan's American Bridge Company acquired the Berlin Iron Bridge Company in 1900.[xix] Among the active contracts transferred to American Bridge Company for completion at the time of the acquisition was Contract 4780A, the rear, two-story "machine shop extension" for the Beaman and Smith building. an effective doubling of the company's manufacturing space "owing to an increase in business."[xx] Although no paperwork for the original 1898 construction appears to have survived, cost figuring sheets for the machine shop extension provide some insight into the economics and technology of steel-frame building construction.

Rolled Iron and Steel	$3054.23
Castings	266.39
Rails	73.27
Screws	5.32
Paint	55.54
Drawings	237.22
Labor	647.60
Expense	400.20[xxi]
Contracting Exp.	362.50
Transportation	216.58
Erection	509.99
Gross Expenses	5831.84
Sales price	7250.00[xxii]
Profit	1471.08

At this new plant Beaman and Smith employed from 75-100 workers. An electric crane served a 184' x 40' erecting room.[xxiii] One of the heavy machine tools fabricated at this plant was a combined vertical and horizontal spindle milling machine weighing 65 tons.

Concrete Flat Slab Construction

There was no significant expansion of Beaman and Smith's plant from 1900 to 1917, when the company built a four-story, reinforced concrete building attached to the south wall of the original steel frame building.

Very early reinforced concrete industrial buildings in many ways represented a transfer of the design characteristics of column and girder steel-frame construction to this new material. Because of differences in the strength and elasticity of the structural material, however, concrete construction required a comparatively deep system of beams and girders to support the weight of a concrete floor and the anticipated industrial loads to be placed upon them. This increased depth added significantly to the floor height, overall size, and cost of construction. A local example of this early form of concrete construction is the United Wire and Supply Company building in Pawtucket (1906).[xxiv]

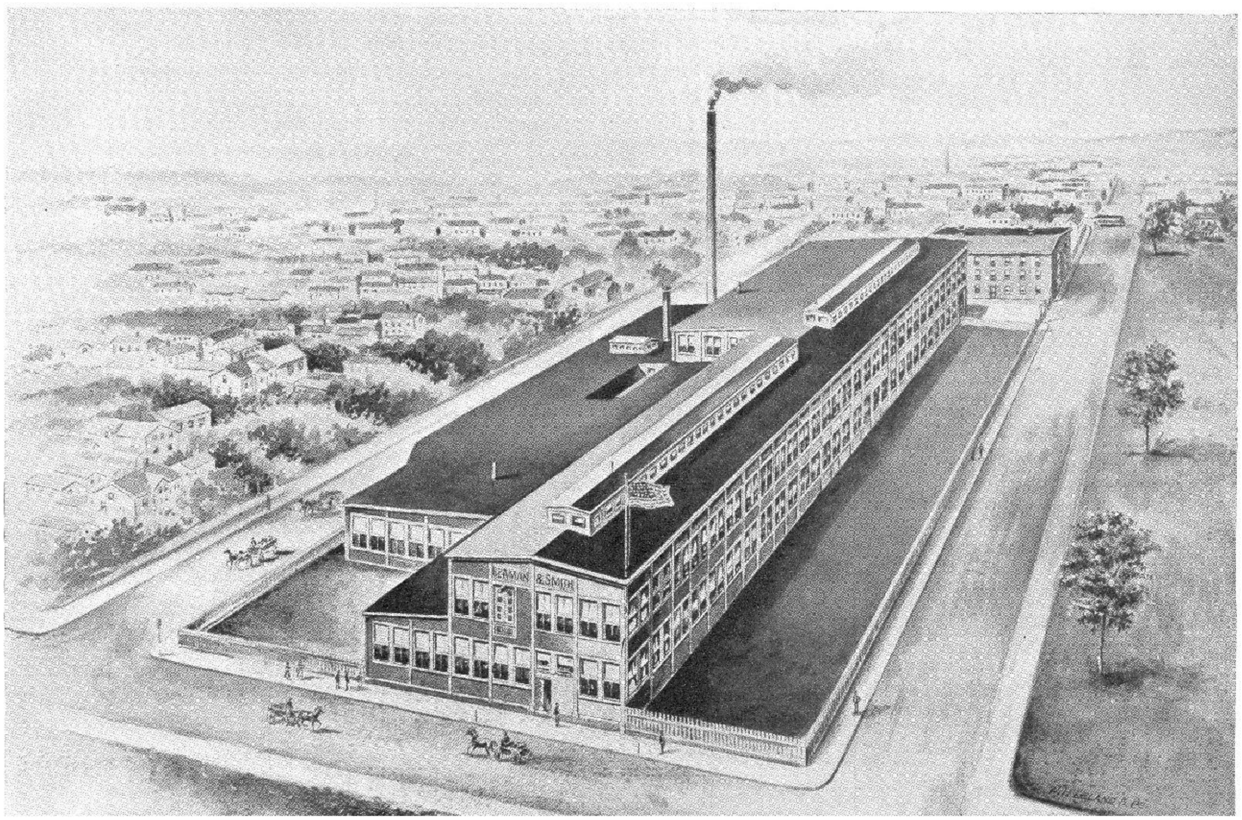


Figure 5
1901 illustration of Beaman and Smith Co. Building
The two-story, 60' x 120' rear extension begins at the rear roof monitor.
The 1917 concrete addition now occupies the lawn shown to the right of the original building.
Note: This illustration does not represent the building as-built. The 1-story wing at the left of the façade was never built.

A significant advance in concrete building construction was made with the work of C.A.P. Turner, a Minneapolis engineer who developed what Carl Condit called "the first mature technique of column-and-slab framing."[xxv] This technique, employing an elaborate system of concentric and diagonal reinforcement bars in the slab and flared or "mushroom" column capitals, eliminated the need for girders to support the floor system. Turner developed this design in 1905-6, and received a patent in 1908. The technology reduced building cost through the elimination of unnecessary ceiling height, thus allowing more usable space, greater window heights and more natural illumination. The earliest example of a flat-slab, reinforced concrete industrial building in Rhode Island is the 1910 A.T. Wall Building in Providence, a building which uses brick for the spandrel walls and glass curtain walls. A few years later the Revere Rubber Company built a concrete frame storage building (1913) at their plant along the Woonasquatucket River, in Providence.[xxvi]

Beaman and Smith used the new building (Building 2) to house a first-floor office, machine shops on the 1st and 2nd floors, storage on the third floor, and a drafting room on the fourth floor.

Recent History

Elmer Beaman died in 1921; the company went out of business in 1926. The Beaman and Smith plant appear to have been vacant until 1931, when it was occupied by James Hill Manufacturing Company, a manufacturer of metal containers. Hill occupied the building until 1971. APCO stationers consolidated the former Beaman and Smith property with the Federal Lithographers (the successor to Providence Lithograph) property to the south. After 1983, Reynolds Street (between Prairie Avenue and Gordon Avenue) was closed off for the construction of a one-story, cement block shipping dock and connector between Beaman and Smith and the complex of the former Providence Lithograph Company. The Beaman and Smith buildings have been vacant since about 1990.

MAJOR BIBLIOGRAPHICAL REFERENCES

Books

Biographical History of the Manufacturers and Businessmen of Rhode Island. Providence: J.D. Hall, 1901.

Condit, Carl W. *American Building Art: The Twentieth Century*. New York: Oxford University Press, 1961.

Darnell, Victor C, *Directory of American Bridge-Building Companies, 1840-1900.* Washington, DC: Society for Industrial Archeology, 1984.

Hunter, Louis C. and Lynwood Bryant. *A History of Industrial Power in the United States, 1790-1930. Volume III: The Transmission of Power*. Cambridge, MA: The MIT Press, 1991.

Huntington, Whitney Clark. *Building Construction.* New York: Wiley and Sons, 1941.

Kulik, Gary and Julia Bonham. *Rhode Island: An Inventory of Historic and Engineering and Industrial Sites*. Washington: Historic American Engineering Record, 1978.

Singer, Charles et al. *A History of Technology* (Vol. V). New York: Oxford University Press, 1958. Schubert, H.R. Chapter 3: "The Steel Industry."

The Berlin Iron Bridge Company. East Berlin, CT: Berlin Iron Bridge Company, No date. Two undated (ca 1895) catalogs on file, Connecticut Historical Society Museum, Hartford, CT.

Articles

"Beaman and Smith." *Providence Journal of Commerce* 2 (April 1894): 12.

Board of Trade Journal 12 (May 1900): 217.

"Elmer Beaman, War Veteran Dead." *Providence Journal* (5 January 1921): 15.

"Narragansett Electric Lighting Company furnishing power for the plant of the Providence Lithograph Company." *Board of Trade Journal* 19 (March 1907): pp 138-41

Providence Journal of Commerce 6 (May 1898): 166.

Providence Journal of Commerce 6 (November 1898): 299.

Government Publications

Providence Industrial Sites: Statewide Historical Preservation Report P-P-6. Providence: RI Historical Preservation Commission, 1981.

Electronic Sources

PAST, Inc., 2001. *Berlin Iron Bridge Company* (author: Bruce Clouette). http://www.past-inc.org/bibco/ (August 29, 2005).

Unpublished sources

Manuscript costing data for Berlin Iron Bridge Company contract 4780a for Beaman and Smith Machine Shop Extension, 1900. On file, Manuscripts Collection, Connecticut Historical Society Museum and Library, Hartford, CT.

Maps and Engineering Drawings

City of Providence Plat Maps, 1908, 1918

Everts and Richards Topographical Atlas Map, 1895.

Sanborn Fire Insurance Maps 1889, 1900, 1904, 1921, 1950.

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

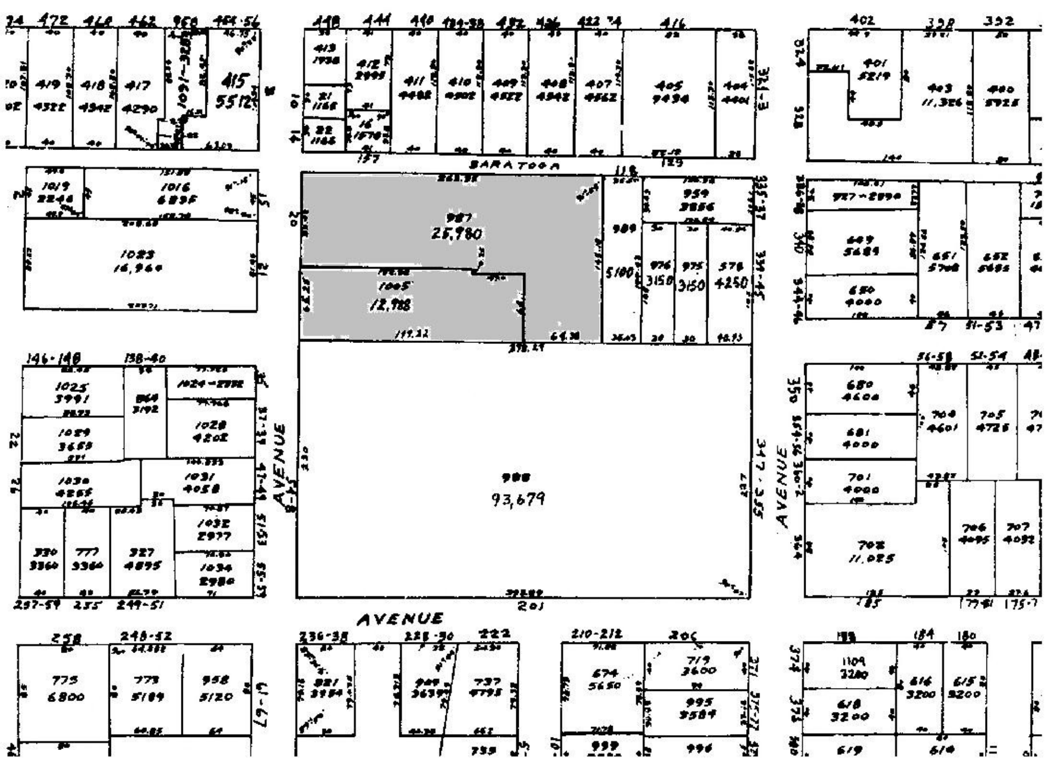
GEOGRAPHICAL DATA

Boundary Description

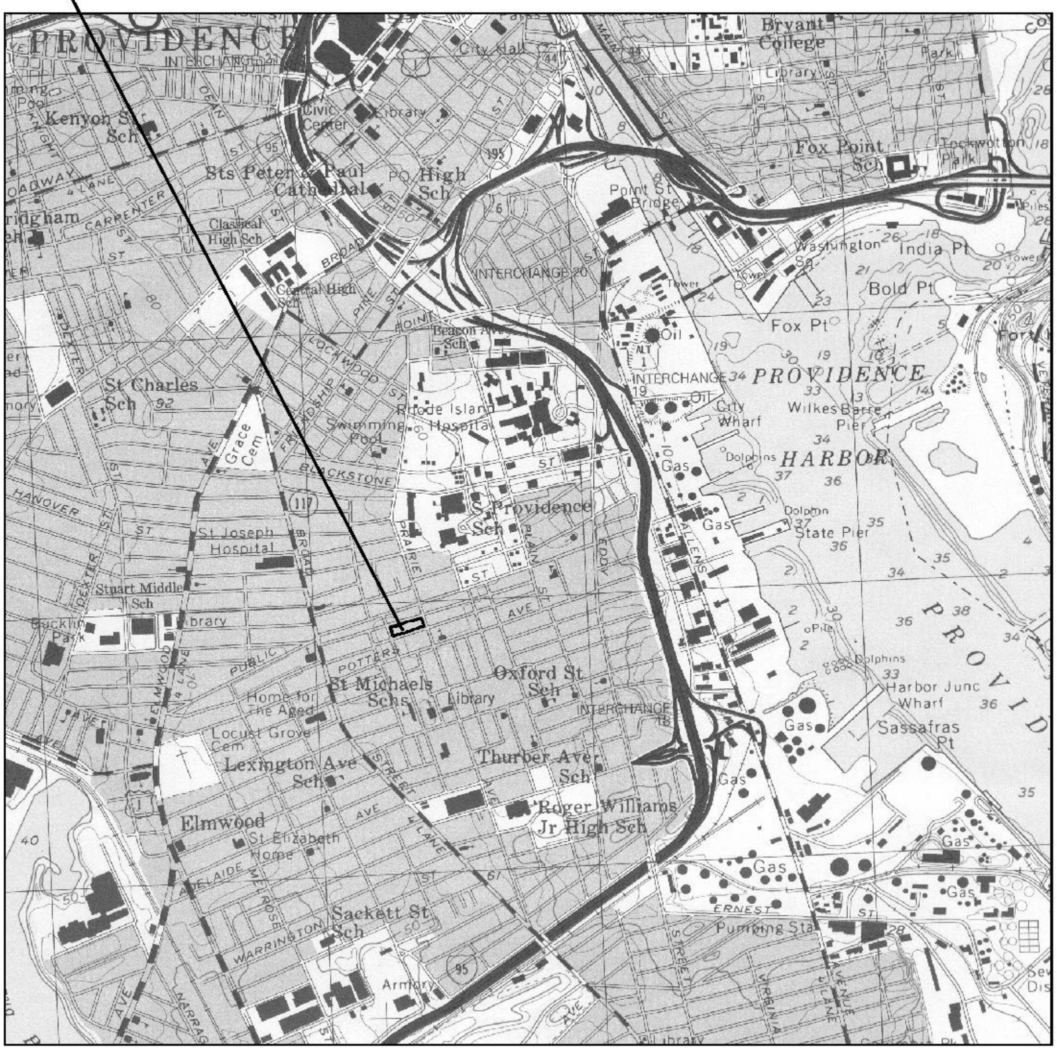
The boundaries of Beaman and Smith Company are contiguous with Providence Tax Assessor's Plat 45, Lots 987 and 1005.

Boundary Justification

These boundaries, comprising 0.86 acres, define the land historically associated with the operation of Beaman and Smith Company and successive occupants of the building from 1898 to 1926.



Beaman and Smith Company Mill
20 Gordon Avenue
Providence, RI
Providence, RI Quadrangle
Scale: 1: 24,000



Notes

[i] These beams are stamped "Pencoyd," provided to Berlin Bridge Company by the Pencoyd Iron Works plant in Philadelphia. Pencoyd was one of the 27 bridge and structural steel companies absorbed into the American Bridge Company in 1900.
[ii] One cut was made to allow second-floor communication between Buildings 1 and 2.
[iii] The Providence Steel and Iron Company plant (1903) provides an example of group-drive shafting and belting driven by electric motors. See National Register nomination (2004), on file RIHPHC.
[iv] The 1921 Sanborn map notes a concrete frame with brick walls on this building.
[v] Gary Kulik, *Rhode Island: An Inventory of Historic Engineering and Industrial Sites,* p. 13.
[vi] There is some confusion as to Beaman's military service. An item on Beaman and Smith in the *Providence Journal of Commerce* (April 1894:12) cites his service in this Massachusetts outfit. According to Beaman's obituary (*Providence Journal* 5 January 1921:15), he was associated with the 23rd Regiment of the New York National Guard.
[vii] This catalogue is on file, Rhode Island Historical Society Library.
[viii] It was not uncharacteristic of the Sanborn Company to make note of such arrangements. For example, in 1889 the Stedman and Fuller building in South Providence drew its steam power from the neighboring Laura Building.
[ix] Illumination was by gas lamps (source: Sanborn Fire Insurance Map, 1889).
[x] Providence Lithograph had also occupied one of the steam-powered, group drive buildings erected by Charles Perkins in 1887-1892. The company remained there from 1890 to 1907.
[xi] See "Narragansett Electric Lighting Company furnishing power for the plant of the Providence Lithograph Company." *Board of Trade Journal* 19 (March 1907): 138-41. Providence Lithograph's 1907 move to the Prairie Avenue plant has interesting similarities to that of Beaman and Smith nine years earlier. Both Beaman and Smith and Providence Lithograph were original tenants in the Charles Perkins Buildings on Westfield Street in Providence. Both companies opted for electric drive in their new South Providence plants. Beaman and Smith occupied their first floor operation on Westfield Street from 1886 to 1898; Providence Lithograph occupied their building from 1892 to 1907. In both cases, advances in motors for electric drive and the technical refinements in the transmission of current made this a practical and profitable consideration.
[xii] See the 1895 Everts and Richards Atlas and Henry Joslin's chapter, "The Street Railways of Rhode Island," in *The New England States*, William Davis, Ed., (Boston: DH Hurd, 1897). A closer inspection of manufacturer's plaques on the motor of the *in situ* traveling crane found at the rear (east end) of the Beaman and Smith building could provide evidence of the nature of the electrical current applied.
[xiii] Victor Darnell, *Directory of Bridge-Building Companies* (1984): vii.
[xiv] Bruce Clouette, "History of the Berlin Iron Bridge Company," http://www.past-inc.org/bibco/history.htm (2001, accessed September 2005)
[xv] Berlin Iron Bridge Co. Collection, Manuscripts division, Connecticut Historical Society Museum.
[xvi] *Biographical History of the Manufacturers and Businessmen of Rhode Island* (1901): 270.
[xvii] Information on the three buildings comprising the electrical plant of Pawtucket Gas was drawn from an item in the *Board of Trade Journal* (Sept 1891): 248. This plant was designed by Remington and Henthorn, Engrs. and Architects, Providence. A *Providence Journal of Commerce* item (August 1895) cites the intention of Silver Spring Bleaching and

Dyeing to build three Berlin buildings to be used for box manufacturing at 415 Charles Street.
[xviii] From undated catalog on file, Manuscripts Collection, Connecticut Historical Society Library, Berlin Iron Bridge Co. collection.

[xix] Operated as a subsidiary of US Steel, Berlin was one of 28 companies acquired by JP Morgan in an attempt to control the country's bridge-building and structural steel industry.

[xx] *Board of Trade Journal* (May 1900); 217.
[xxi] It is unclear what this category represents and how it differs from "Contracting Expenses."
[xxii] In today's dollars, this extension would represent a cost of roughly $160,000. Source: John J. McCusker, "Comparing the Purchasing Power of Money in the United States (or Colonies) from 1665 to Any Other Year Including the Present." Economic History Services, 2004, URL : http://www.eh.net/hmit/ppowerusd/
[xxiii] This was not the first electric crane in a Providence factory building. The American Ship Windlass Company in 1891 utilized a 20-ton overhead crane.
[xxiv] This building is located at 381 Roosevelt Avenue in Pawtucket. Ernest Ransome, a pioneer in reinforced concrete bridge and building construction, built the Beverly (MA) Shoe Machine Company Building in Massachusetts in 1903-05, a very early example of a concrete industrial building.
[xxv] Carl W. Condit, *American Building Art: The 20th Century* (1961): 167.
[xxvi] This building utilized brick fill with very limited window space. National Register listed as part of the U.S. Rubber Complex in 2005.


FUTURE
COMMERCIAL SPACE


FUTURE
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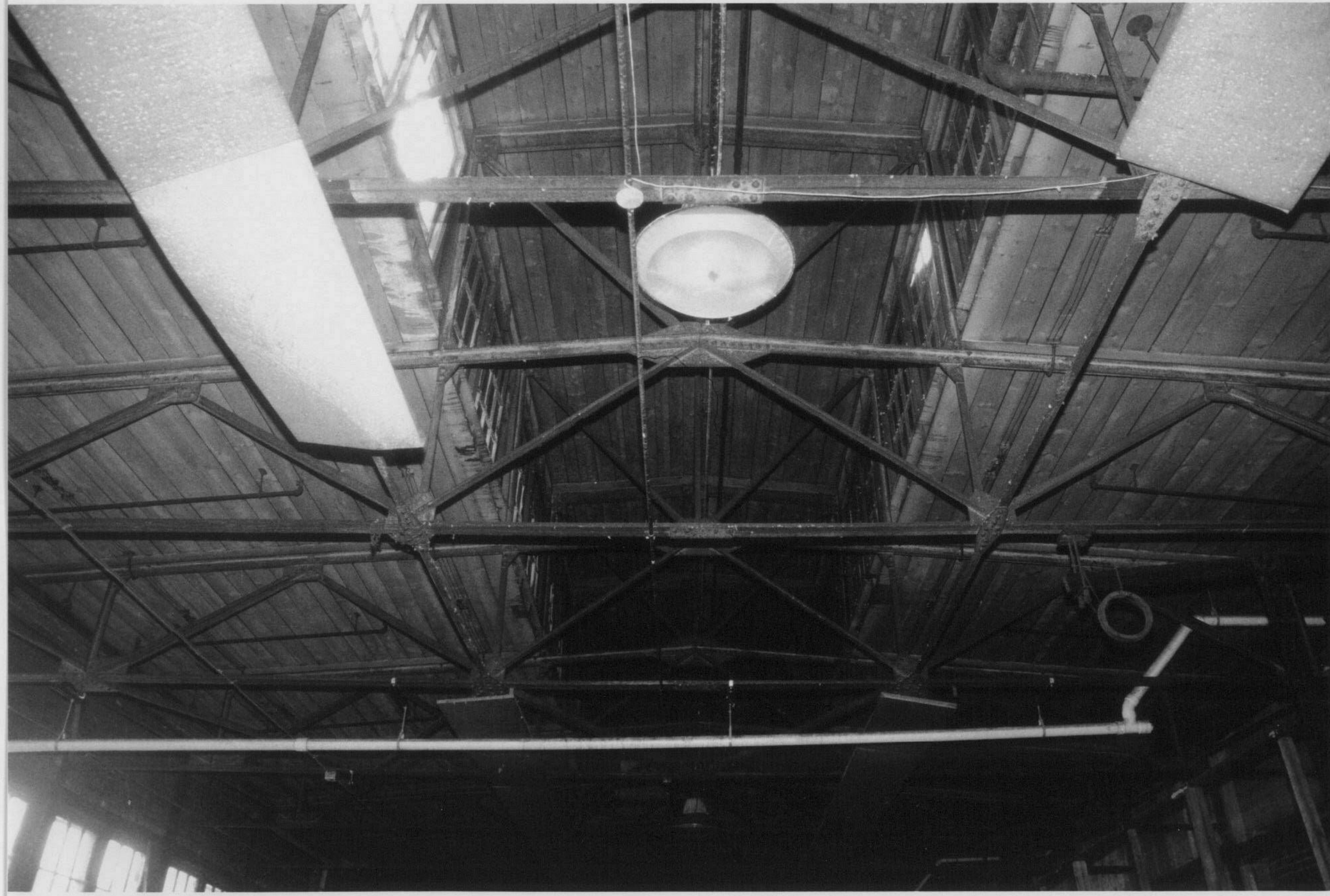
20 GORDON AVENUE
apco
STATIONERS • PRINTERS


STATIONERS PRINTERS



BEAMAN AND SMITH COMPANY MILL
PROVIDENCE
PROVIDENCE COUNTY, RI
UTM REFERENCE:
19 299142 4631100