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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 Providence Gas Company Purifier House

other names/site number Imperial Warehouse Company, City Tire Company

2. Location

street & number 200 Allens Avenue  not for publication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] 5/2/2007  
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:

- 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)

[Signature]  
Signature of the Keeper  
Edson H. Beall

Date of Action  
6-21-07

Providence Gas Company Purifier House  
Name of Property

Providence County, Rhode Island  
County and State

**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	
_____	_____	buildings
_____	_____	sites
_____	_____	structures
_____	_____	objects
_____	_____	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: energy facility  
COMMERCE: specialty store  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Current Functions**  
(Enter categories from instructions.)

VACANT  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**7. Description**

**Architectural Classification**  
(Enter categories from instructions.)

OTHER: late 19<sup>th</sup>-early 20<sup>th</sup> century industrial  
\_\_\_\_\_  
\_\_\_\_\_

**Materials**  
(Enter categories from instructions.)

foundation BRICK  
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.)

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**DESCRIPTION**

The Providence Gas Company Purifier House (1900) is a large, four-story, steel frame, reinforced concrete and brick industrial building with additions, located at Allens Avenue and Public Street on the Providence waterfront. It is a long, narrow building, oriented east-west, with an elliptical arched roof and a four-story stair tower in the center of its north elevation.

The building was used by the Providence Gas Company to purify the gas manufactured at the South Station until the plant was closed in 1917 and the rest of the buildings removed. In the 1920s, a new owner modified the interior spaces and exterior skin of the Purifier House so that it now resembles a more conventional industrial building. Successive owners made several additions—mostly along the south elevation—through the 1960s.

As built in 1900, the 41' x 178' Purifier House was twenty-one bays long and three bays wide. The first four bays on the western end of the building, comprising about 35' of its total length, served as office space<sup>1</sup>. This front area was divided into three stories, with the first floor about 20' in height and the second floor about 14' high. The third floor, which extended the length of the building, was about 10'. In the rear seventeen bays (about 140') of the building, there was no intermediate floor level, creating a ground story 35' high that housed the purification apparatus, multiple purifier "boxes" with each box likely occupying a bay.

The building's most distinguishing characteristic was its steel frame, which was largely exposed on the interior, as much of it still is today. The frame's principal members are twelve columns on the long sides and an intermediate pair at either end, each built up from riveted Z-bars and supported on a pyramidal brick base with a monolithic stone cap. Another interior pair of columns between the fourth and fifth bays helps carry the supports for the original second and third floors at the west end of the building; these supports are a pair of 38"-deep built-up plate girders that carry the floor beams.

Three pairs of longitudinal trusses provide lateral stability to the columns and help carry the transverse trusses that support the top floor and the roof. The lowest and middle pairs of these trusses, which resemble Pratt trusses, run only the length of the original purifier room; the top truss, which is a Warren truss, runs the full length of the building. The lowest truss is 48" deep; the middle truss 65" deep and the top truss is 32" deep. The longitudinal and transverse truss members are made up of angle irons with riveted connections; in the lowest longitudinal truss the vertical and horizontal members are laced.

<sup>1</sup> The Beaman and Smith Building (1898, NR listed 2005), 20 Gordon Street in South Providence (also built by Berlin Iron Bridge Company) shows a similar differentiation between industrial space in the rear and office space in the front.

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The transverse trusses that support the top floor and the roof are spaced two to each of the column bays, so that half of them are supported by the columns and half by the longitudinal trusses. The trusses supporting the top floor are double-intersection Warren trusses, 65" deep. The roof is supported by bowstring trusses with a convex upper chord formed by a 10"-deep beam with angle lacing, except at the crown where there is a solid plate. The lower chord is made of two 1.5"-diameter steel rods connected by a center turnbuckle. The lower chord is pinned at its connecting points to the upper chord; these are the building's only pinned connections (See Figure 5).

The roof deck is approximately 6" of reinforced concrete. It was originally covered with a standing seam metal roof that has since been replaced with a rubber membrane. Visible from within the building are the outlines of 24" diameter holes located on the underside of the roof at the arch crown in thirteen of the building's rear bays.<sup>2</sup> These holes (now concrete-filled) mark the former location of a series of sheet metal roof vents corresponding to the purifier units for which the building was designed (See Figure 7).

The original exterior surface of the building was stucco over wire lath.<sup>3</sup> The original windows were wooden frame: 8/8 double hung on the ground floor; 12/12 double hung on the second floor; and 12-light single hung on the third floor. These corresponded to the bay configuration of the steel frame, with two windows between each pair of columns.

The stairtower was of identical construction to the main building except that it had a flank gable roof. Three bays wide, it had exterior loading doors at three levels.

In 1925, the building was reconfigured for warehouse use both inside and out. In the rear, three floors of reinforced concrete were constructed within the ground story formerly occupied by the purifying equipment. This created the present-day floor configuration: a roughly 11'-high ground story; a 9'-deep high second story; a 14'-high third story; and a fourth story (the original third floor) 10' high to the lower chord of the roof trusses. On the ground floor the concrete framing consists of two rows of eight columns. Each row consists of four pairs of 18"-square columns, each pair supporting a 40"-deep heavy concrete beam. These beams carry the cast concrete floor joists and the floor slab. On the second floor, there are two rows of eight mushroom columns

<sup>2</sup> The vent hole for the fourteenth (easternmost) purifier unit was lost in the construction of a stone fireplace at the rear of the building, fourth floor.

<sup>3</sup> Unlike the contemporary brick-sheathed Beaman and Smith Building, built by Berlin Iron Bridge Company a few years earlier, the stucco-over-wire lath original design for the Purifier Building did not reveal the outer surface of the steel verticals on the exterior.

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carrying the flat concrete floor slab. The columns are 15''square and flare to a 48''-square capital, with 3''-thick, 63''-square pad or drop immediately below the floor slab.<sup>4</sup>

At the front of the building the 1925 modification to four floors required the insertion of a new second floor in the c. 20'-high ground story. This floor is of slow-burning wood construction and is suspended by a series of steel rods from the steel girders that support the original second (now third) floor. This floor level is roughly 1.5' lower than the rest of the second floor to allow for passage under the plate girders and is reached by a short flight of steps.

The original exterior skin and fenestration were completely removed and replaced by brick walls with large window openings filled with steel sash typical of industrial architecture of the period. The windows are grouped with three sashes to an opening. On the first, third and fourth floors the predominant window form is a 12-light window flanked by two 16-light windows with 8-light hoppers. On the second floor (with its lower ceiling), a central 9-light window is flanked by two 12-light windows with 6-light hoppers.

The stair tower was extended on the west end to accommodate a freight elevator, the gable roof was replaced by a higher flat roof and loading doors were eliminated.

The interior and exterior changes required some modification of the steel framing. The columns were completely encased in brick, except those in the stair tower and the two interior columns supporting the plate girders at the west end of the building. The bottom chord of the lowest longitudinal truss is now partially encased in the second floor slab and some parts of the bottom chord of the middle truss were cut to allow window operation.

<sup>4</sup> This pad serves to resist the high shearing stress at this location (Carl Condit, *American Building Art*, p. 168).

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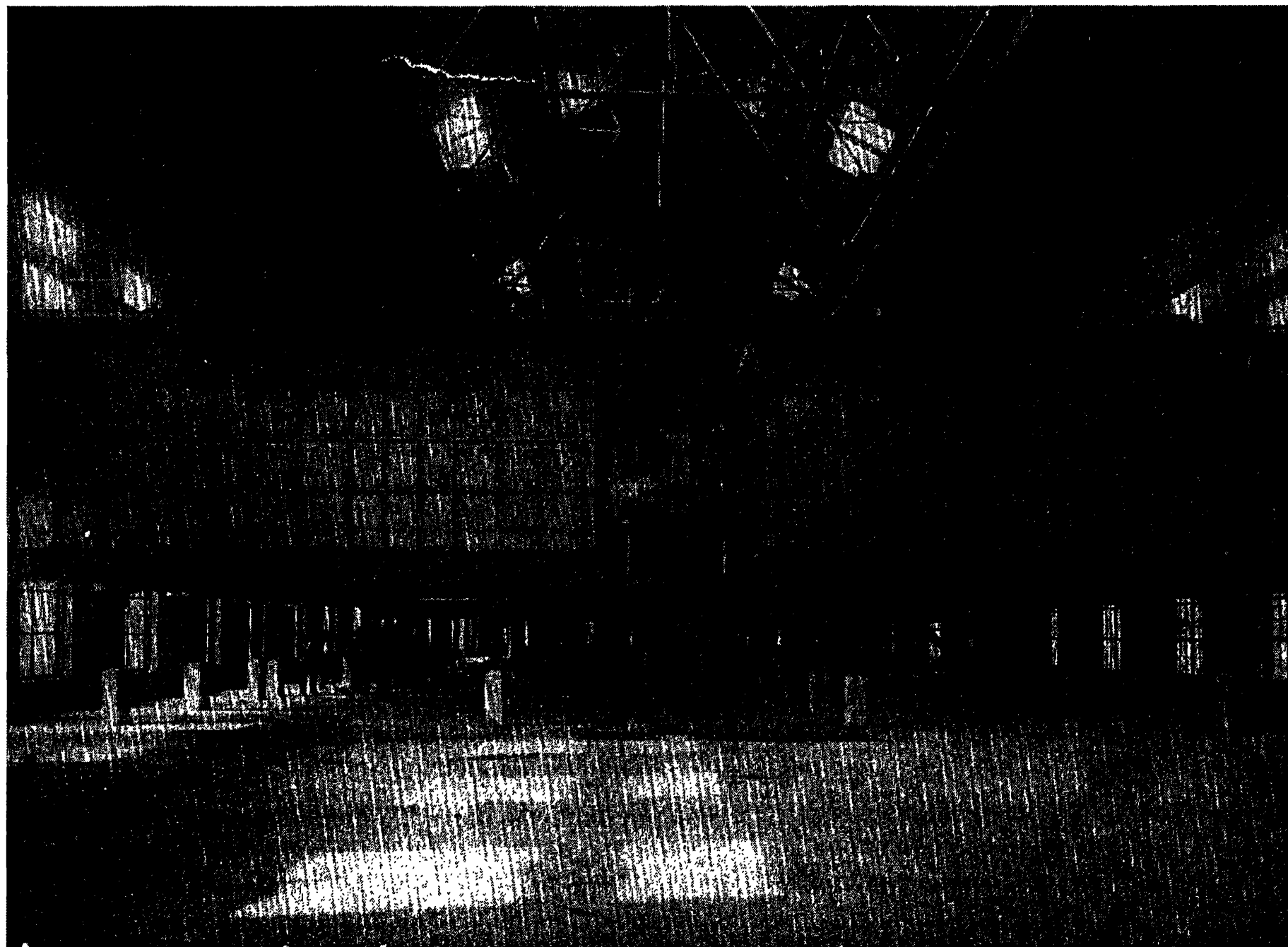
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**Figure 1**

Interior view of tandem iron oxide purifier boxes  
*Book of Wonders* (1915)

Figure 1 shows a tandem arrangement of a succession of purifier boxes in a pre-1915 industrial building. Although we cannot be sure that this arrangement is representative of that used by Providence Gas Company in 1900, a single box (scaled from this photo) is roughly 50"-long, 20'-high, and set 10' off the floor below. These dimensions correspond relatively well with the dimensions of the Providence Gas Purifier House and its floor arrangement. The 41' width of the building would have accommodated a single, horizontally-placed box mounted on supports about 10' above the dirt floor; the height of this support would have provided access from below to a roughly 20'-high purifier box occupying much of the height of the open first floor. The sequence of

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ceiling vents shown in Figure 7 suggests a succession of 14 purifier boxes, each occupying approximately 10' of the 140' industrial rear of the building.<sup>5</sup>

Some time after City Tire Company occupied the building in 1940, it adapted the ground floor front of the building to showroom and retail space. This modification included the likely removal of 1925 steel frame multi-light windows and their replacement with plate glass windows. This modification was likely contemporaneous with the application of the surviving duochrome vitrolite panels commonly used in storefronts of the period.

**First addition.** Textile Chemical Company Boiler House (ca 1921). A single story, gabled-roof, brick and cement block structure measuring 26' x 52' and set perpendicular to the southeast rear corner of the Purifier House. The gabled roof is supported by a heavy wood frame supported by a single row of square wood columns. Once visible on three sides, it is now mostly enclosed by later additions. It housed one boiler for the Textile Chemical Company, the main occupant of the building from 1921 to 1924 and continued to serve as a boiler house in the period following the 1925 adaptation. An iron plate chimney located several feet from the east wall was demolished after 1951.

**Second addition.** Garages (between 1939 and 1951). The owner of the lot immediately south of the Purifier House built two connected cement block garages as part of an auto parts business between 1939 and 1951. The north garage measured about 23' x 29', the south about 29' x 34'. Over time this parcel and these two buildings were incorporated into City Tire, a later tenant of the Purifier House. Unconnected as of 1956, the east wall of the north garage was later moved back to join the west wall of the Boiler House.

**Third addition.** City Tire Storage Building (between 1951 and 1956). A cinderblock, deep single story, L-plan building wrapping around the south wall and most of the east wall of the Boiler House. Its dimensions are roughly 69' x 70' overall. At the time of construction, this building was accessed by passage through the rear wall of the south garage and a north facing entrance adjacent to the Boiler House.

<sup>5</sup> The open plan and catwalks of the purifier house shown in Figure 1 may differ significantly from the interior layout of the Providence Gas Company building. It should be noted, however, that the 1904 Sanborn map describes the building as 2-3 stories. This could indicate that the front office area of the building comprised three stories, while the industrial rear comprised two stories: a roughly 35'-high room comprising what is now the first, second, and third floors; and a top, concrete floor relatively unchanged to the present. The relative lightness of the 48" lower truss as compared to the deep truss supporting the concrete slab of the present-day fourth floor and the absence of any sign of a pre-1925 concrete floor resting on the vestigial truss system (the remains of which are still visible on the periphery of the second floor), suggests that this open truss supported the weight of the purifier boxes in a setting similar to that of Figure 1.

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**Fourth addition.** City Tire garage entrance (between 1951 and 1956). A north elevation, roughly 32' x 11", brick, single-story lean-to addition sharing a south and west wall with the Purifier House. This lean-to provides two garage door entrances and two doorways into the building.

**Fifth addition.** City Tire storefront extension and garage (1969). City Tire Company built a two-story extension to its showroom and office space ca 1962. This brick, 26' x 36' structure provided a south retail entrance into the lot occupied by the former auto parts business. It also built a 6-bay, cement block retail service garage opening to the south. The two easternmost bays of this garage have been demolished at the time of this writing, leaving four original garage bays and an open east wall. These bays occupied space that is the current location of a brick four-story tower attached to the south wall of the Purifier House.

**Sixth addition.** North elevation garage entrance (1966). A 45' x 11', brick lean-to addition along the north wall (northeast corner) of the building. This lean-to provides a garage door entry into the former Purifier House.



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**Photograph List**

The information for numbers 1–5 below is the same for each photograph:

1. Providence Gas Company Purifier House
2. Providence County, Rhode Island
3. Edward Connors, photographer
4. September 2006
5. Original negative at: Rhode Island Historical Preservation & Heritage Commission  
150 Benefit Street, Providence, Rhode Island

The following information is specific to the indicated photograph:

6. West (façade) and north elevations, view looking southeast
7. Photograph #1
  
6. West and north elevations, view looking southwest
7. Photograph #2
  
6. West (façade) and south elevations, showing additions to south elevation, view looking northeast
7. Photograph #3
  
6. Interior of second floor at rear (east end) of building, showing mushroom column concrete construction, view looking northeast
7. Photograph #4
  
6. Interior of second floor at front (west end) of building, showing girders and suspended floor, view looking northeast
7. Photograph #5
  
6. Interior view, roof trusses at west end of building, view looking west
7. Photograph #6
  
6. Interior view, detail of pin connection at lower chord of roof truss
7. Photograph #7

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- 6. Vestige of original truss that supported purifier boxes, second floor, north side of building
- 7. Photograph #8
  
- 6. Detail of upper truss supporting fourth floor and brick-encased steel beam on third floor, north side of building
- 7. Photograph #9

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**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

**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 #

**Areas of Significance**

(Enter categories from instructions.)

ARCHITECTURE

INDUSTRY

**Period of Significance**

1900, 1925

**Significant Dates**

1900, 1925

**Significant Person**

N/A

**Cultural Affiliation**

N/A

**Architect/Builder**

Berlin Iron Bridge Company (1899-1900)

C.I. Bigney Construction Company (1925)

**Primary location of additional data:**

- State Historic Preservation Office
- Other State Agency
- Federal agency
- Local government
- University
- Other

Name of repository

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**SIGNIFICANCE**

The Providence Gas Company Purifier House (1899-1900) is a significant example of architectural engineering from the beginning of the era of steel construction. Designed and fabricated by a regional iron bridge maker that expanded into steel building construction in the early 1890s, the Purifier House represents an important category of early steel construction, the special-use manufacturing building, with the special use in this case being part of the coal gas manufacturing process. Of the handful of surviving Berlin Iron Bridge Company buildings in Rhode Island, it is the only Rhode Island example of the Company's "arch truss" roof. Built for one of the earliest uses on the new Providence Harbor, and subsequently adapted for warehouse and light industrial uses, the Purifier House is also significant for its associations with the evolution of Providence's industrial waterfront in the twentieth century.

**Providence Gas Company**

Providence was among a number of eastern seaboard cities and towns to establish a manufactured gas<sup>6</sup> plant for municipal use in the mid-19<sup>th</sup> century. A series of discoveries from the late 16<sup>th</sup> through the 17<sup>th</sup> centuries led to the realization that the destructive distillation of coal yielded a high volume of hydrogen gas suitable for illumination. More than two centuries would pass before these discoveries would lead to practical applications in residential or factory use and for street lighting. Early 19<sup>th</sup>-century experiments in street and residential gas illumination took place in Newport, Rhode Island, as well as in Baltimore, Maryland.<sup>7</sup>

The Providence Gas Company, chartered in 1847 and in full operation the following year, erected its first manufactured coal gas plant at the corner of Benefit and Pike Streets in Fox Point. A typical plant of this period (located near a rail or waterfront source of coal) comprised a retort house for distillation of the coal, washing and scrubbing apparatus for cooling and removal of tars, ammonia and other impurities, a purifier house for removal of hydrogen sulfide, a metering house for measurement of the volume of gas produced, and a holder or "gasometer" for storage. Providence Gas dismantled the Pike Street gas plant around 1870, at which time it built West Station on the west side of the Providence River at Globe and Eddy Streets. This plant comprised a retort house, condenser and scrubber building (with adjoining tar house), lime process purifier house, scrubber

<sup>6</sup> Manufactured gas is the name for the gas generated by combustion of coal in a closed retort. This type of gas, used predominantly for cooking and heating in the 20<sup>th</sup> century, was supplanted by the introduction of natural gas after World War II. Providence Gas Co. switched from manufactured gas to natural gas in 1951.

<sup>7</sup> David Melville of Newport experimented with residential gas lighting as early as 1806 and in lighthouses by 1810. Baltimore, MD, established the first American municipal gas lighting system in 1816. Source: <http://www.rushlight.org/research/gas.html>

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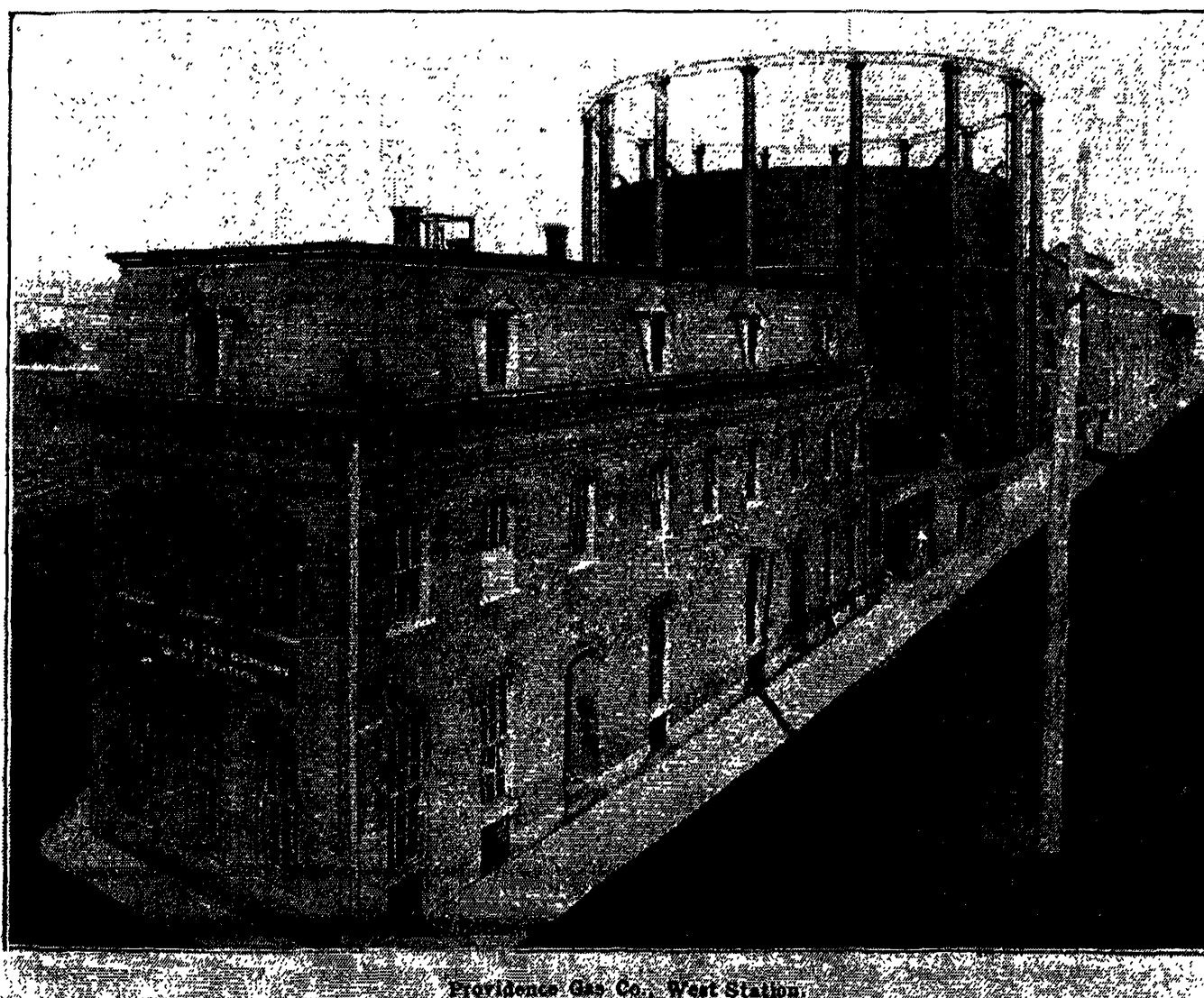
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house, gasometer and office (see Figure 2). This plant also included a second purifier house built in 1896. An article in the April 1896 *Providence Journal of Commerce* describes the circumstances of its construction:

The Providence Gas Co. has recently commenced the erection of a three-story brick purifier house adjoining their present purifier house on Globe Street near the harbor. This addition is made necessary, for notwithstanding that electric lights have superseded gas lamps on many of the principal streets of the city, the consumption of gas is rapidly increasing due largely to the many new suburban houses erected during the past five years, and also to the popularity of the gas stove for summer use.<sup>8</sup>



**Figure 2**

Providence Gas Company West Station, built 1870

From *Biographical History of the Manufacturers and Businessmen of RI* (1901)

View northeast toward waterfront

Three-story building to the right of the gasholder is the 1896 Purifier House

<sup>8</sup> *Providence Journal of Commerce* 4 (April 1896): 55.

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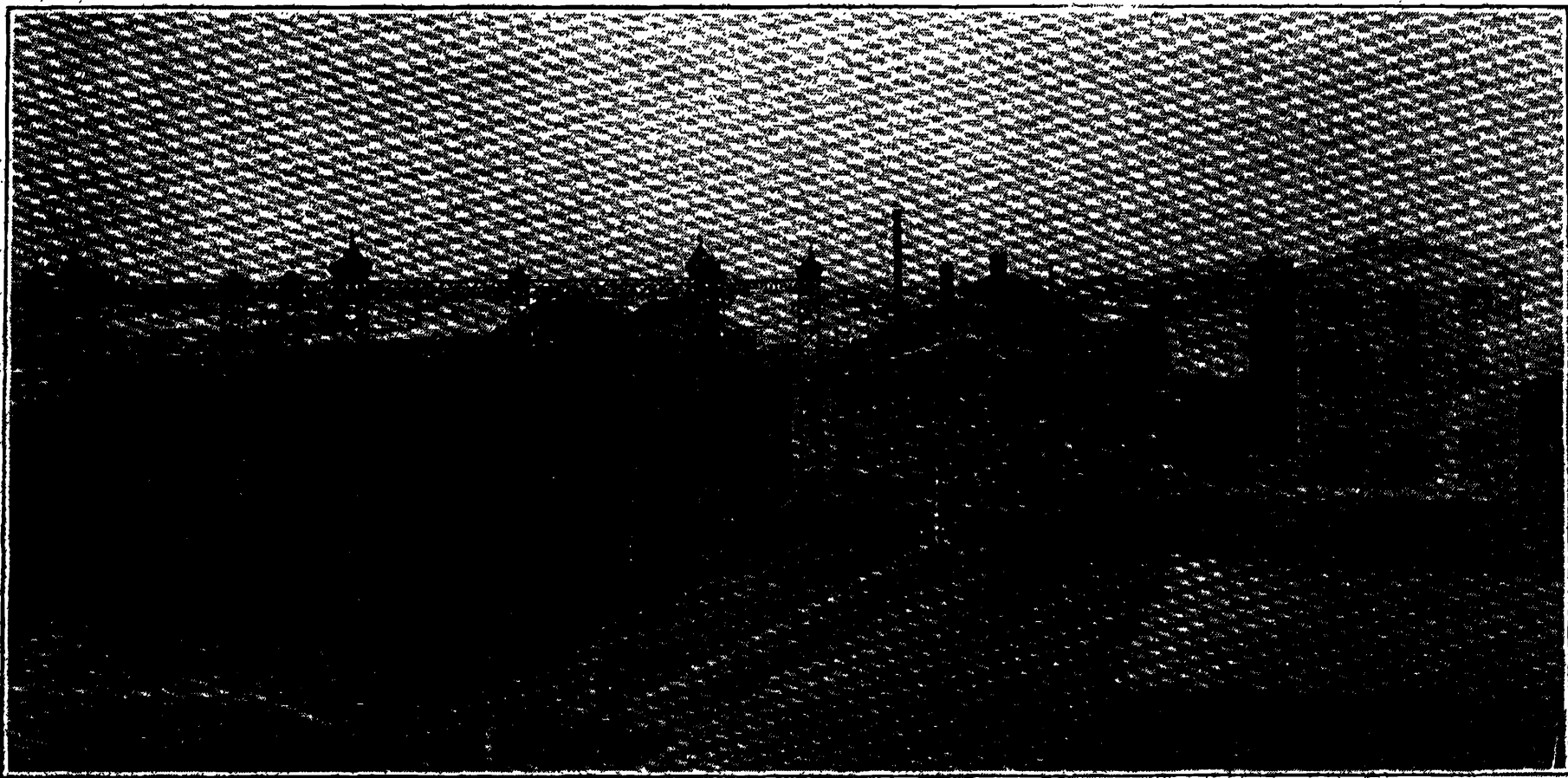
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The absence of a "lime house" associated with this 1896 building indicates that this was the company's first use of iron oxide purification as opposed to the early 19<sup>th</sup>-century lime processes that preceded it. This superior means of manufactured gas purification, introduced into the United States in 1885, utilized iron oxide or "sponge." In this process the manufactured gas was forced through iron boxes charged with beds of moist wood chips coated with iron oxide (FeO<sub>2</sub>). The iron oxide absorbed foul-smelling hydrogen sulfide (H<sub>2</sub>S) from the gas, yielding iron sulfide (FeS), which could then be removed as waste.<sup>9</sup>



Providence Gas Co., South Station.

**Figure 3**

Providence Gas Company South Station (1877) with new Purifier House at right  
From *Biographical History of the Manufacturers and Businessmen of RI* (1901)  
View east from Public Street across Allens Avenue toward waterfront

Providence Gas Company built a second gas plant along the waterfront south of West Station in 1877. Called South Station, this plant was located in South Providence on the north side of Public Street on Allens Avenue

<sup>9</sup> Although the iron oxide process generally supplanted lime purification in the late 19<sup>th</sup> century, technical literature of the period continued to reference the use of lime in combination with iron oxide or as a separate purification stage. The addition of lime served to remove carbonic acid (H<sub>2</sub>CO<sub>3</sub>), another undesirable product of coal distillation.

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(see Figure 3). Although more compact in its siting, the plant was similar in process and operation to its predecessor. The company substantially improved South Station in 1899-1900, rebuilding the retort house and purchasing land across Public Street to the south for a new iron oxide process Purifier House. The contract for the new building went to the Berlin Iron Bridge Company.

**The Berlin Iron Bridge Company**

One of a number of regional New England bridge fabricating companies, Berlin Iron Bridge Company began the fabrication of iron bridges in 1878. Success with iron roof and bridge trusses led the company to begin designing and erecting industrial steel frame buildings in the early 1890s.<sup>10</sup> Within a few years, Berlin built Rhode Island's first steel frame industrial building, a surviving machine shop for Fuller Iron Works (1893). Designed for industrial use, these buildings were notable for their special-purpose construction, rapidity of assembly, and strength. A December 1895 article in *The Iron Age*, a national trade journal of the iron and steel industry, discussed the growing popularity of steel-frame Berlin buildings in the Providence area.

The general design of these structures is the result of long experience and much study on the part of Berlin Iron Bridge Company to produce an economical building to meet the requirements of foundries and manufacturing establishments where buildings of considerable width are used, necessitating strength and plenty of light.<sup>11</sup>

Although Providence Gas Company had worked with Berlin Iron Bridge Company before engaging them for construction of the Purifier House, this appears to be the first complete Berlin building contracted for either of their manufactured gas plants. An undated, ca 1895 promotional catalog describes and illustrates an iron roof designed for a Providence Gas "generator house" (Figure 4).<sup>12</sup> By 1899, however, Berlin had erected a number of special-purpose, steel-frame buildings for industrial clients in the Providence metropolitan area including Pawtucket Gas Company and Narragansett Electric Lighting Company.

<sup>10</sup> More background on Berlin Iron Bridge Company and its entry into steel frame bridge construction is found in the National Register Nomination Form for the Beaman and Smith building. On file, RIHPHC.

<sup>11</sup> "The Advantages Claimed for Brick and Steel Factory Buildings." *The Iron Age* 56 (19 December 1895): 1272-3. This article discusses at length new buildings for the George W. Stafford Manufacturing Company and the Granger Foundry and Machine Company. A detailed halftone of the latter Berlin building is found in *Biographical History of the Manufacturers and Businessmen of Rhode Island* (1901), p. 192.

<sup>12</sup> An examination of 1904 Sanborn Maps of the two gasworks sites of Providence Gas Company is inconclusive as to the location of this generator house. Accompanying catalog text describes a 40' x 100' building subdivided into two sections, one occupying 63' of the length of the building, the other occupying 34'. As described in the text: "The roof was constructed entirely of iron; that is, iron trusses, iron purlins, and covered with corrugated iron." The above mentioned catalog is on file in the Berlin Iron Bridge Company collection at the Connecticut Historical Society Library, Hartford.

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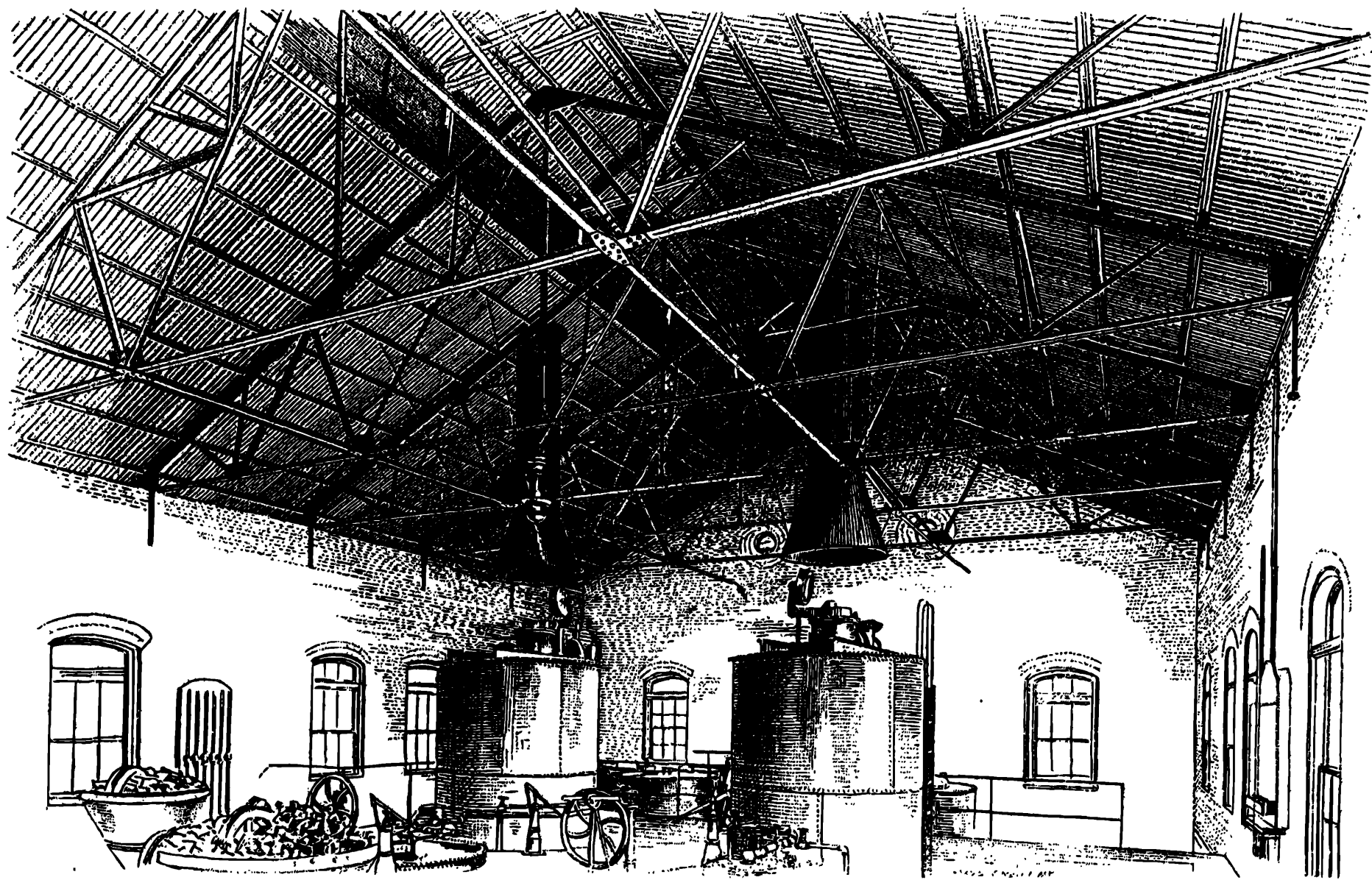
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INTERIOR VIEW IN GENERATOR HOUSE FOR THE PROVIDENCE GAS CO., AT PROVIDENCE, R. I.

**Figure 4**

Interior view of Providence Gas Company Generator House, roof built by Berlin Iron Bridge Company. From undated, ca 1895, Berlin catalog

**The New Purifier House**

The decision to replace the 1877 lime-process Purifier House at South Station was part of a general upgrading of South Station announced in the 1899 *Annual Report* of Providence Gas Company. These improvements included a rebuilding of the main structure, the Retort House. A year later in the *Annual Report*, issued March 5, 1900, the company announced that “a New Purifier House has been built at South Station with a set of new purifiers and the connections will be made to the purifiers put to use this season.”



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Four photos documenting the 1899–1900 construction from steel framing through completed work are on file at the offices of National Grid in Providence. The first of these (see Figure 5, below), likely dating to the summer of 1899, shows framing for about 18 of the 21 bays of the building. A central crane, supported by guy wires, serves to bring steel members into position for riveted attachment. Vertical posts rest on a series of pyramidal



**Figure 5**

Steel frame of Purifier House under construction (1899)

Courtesy, National Grid

Brick towers capped with a granite block. By the time of this photo, the longitudinal trusses and a number of the transverse trusses were in place for these bays, as well as two longitudinal rows of pyramidal footings in the center of the structure, presumably intended for supporting the purifier boxes. Figure 6 shows scaffolding of an enclosed structure and the application of a rough coat of stucco applied over wire lath, and, in some places, a stucco finish coat. Figure 7 shows the building as it appeared from 1900 until its alteration to four stories in 1925.

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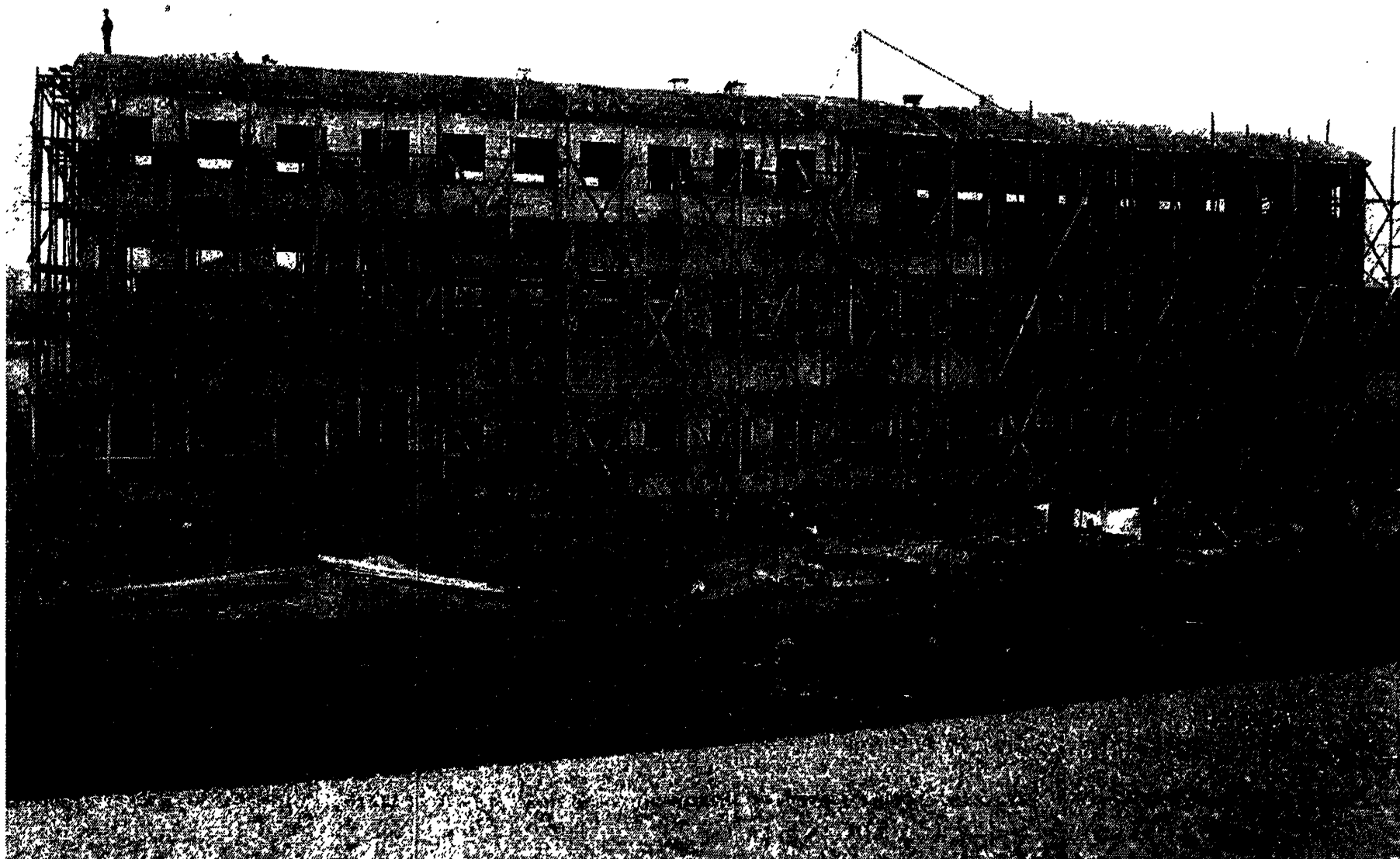
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The construction of the Purifier House incorporated many of the characteristic features of early steel construction, such as the riveted connections and built up posts and beams composed of rolled bars with angle and Z sections. The Z-bar column, composed of four Z-bars riveted to a central plate, was developed by the engineer Charles Louis Strobel in 1886. It was quickly adopted for building construction and favored for carrying heavy loads in the first two decades of steel construction. After Strobel designed a new wide-flanged beam in 1895, the Z-bar column was largely superseded by the H column and other rolled forms that were simpler to manufacture.<sup>13</sup>



**Figure 6**  
View of south elevation (1900)  
Courtesy, National Grid

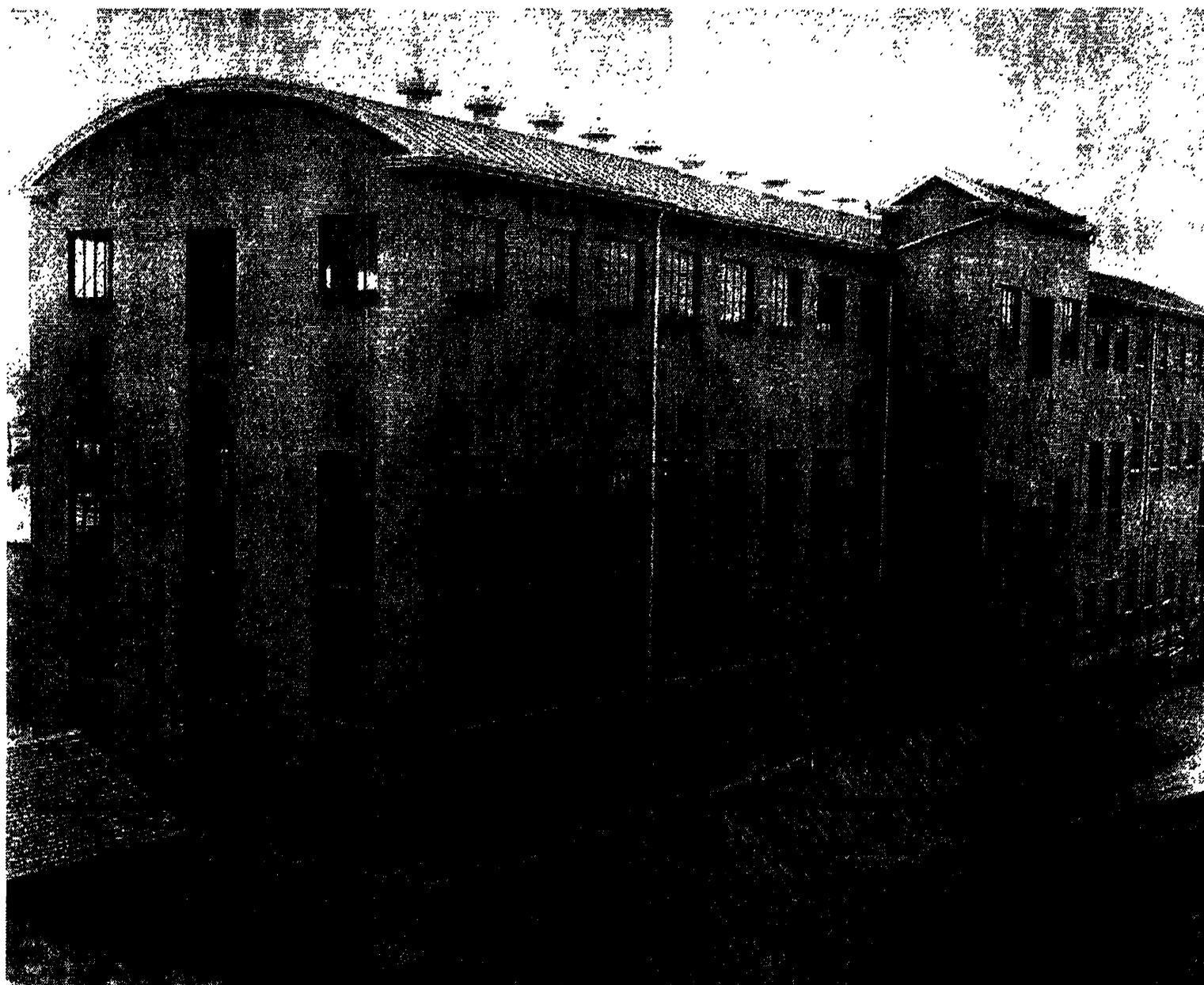
<sup>13</sup> See Henry Jackson Burt, *Steel Construction, A Text and Reference Book Covering the design of Steel Framework for Building* (Chicago: American Technical Society, 1920), p. 187; Tom Peters, "The Rise of the Skyscraper from the Ashes of Chicago," in *Invention & Technology Magazine*, Vol. 3, #2, 1987.

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While taller than the other industrial buildings the Berlin Company erected in Providence, the Purifier House featured the same large volumes of high, open floor space largely unobstructed by intermediate structural supports. The extensive use of trusswork to stabilize the building's skeletal frame reflects the Berlin Company's origins in bridge building and their broad experience in the varieties of truss forms. This is most notable in the Purifier House roof structure. This use of the bowstring or tied-arch truss appears to have been unique among the Berlin buildings in Providence, which typically featured gable roofs supported by Warren or other triangular section trusses. The elegant curve of the "trussed arch," as they called it, is reminiscent of the company's trademark lenticular truss bridges.



**Figure 7**  
Purifier House as built (1900), view southwest  
Courtesy, National Grid

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Providence Gas Company continued to reconstruct its South Station plant, commencing further improvements in 1904 and 1908.<sup>14</sup> By that time, however, the growing population of Providence and the continuing expansion of its industrial base were putting a serious strain on the production capacity of the West and South Station manufactured gas plants.

In April 1909 Providence Gas Company announced its intention to build a modern manufactured gas plant on a 40-acre parcel further south on the waterfront at Sassafras Point. This plant, which was designed for the consolidation of all gas manufacture at a single location, would have a 300,000 cu. ft/day capacity and utilize the Dessau Vertical Retort, a sophisticated technology imported from Germany and the first installation of its kind in the United States. The new works would also include a modern purification plant. Company President John W. Ellis stated in a Providence Journal article accompanying the announcement that the “water gas plant at Public and Allens Avenue will be operated as heretofore for an indefinite period. Eventually the manufacture of water gas will be carried on at Sassafras Point.”<sup>15</sup>

Providence Gas Company decommissioned South Station in 1916, selling the parcels on both sides of Public Street shortly thereafter. The land north of Public was occupied briefly in the early 1920s by the Nitrogen Corporation. All of the buildings of the former gas plant except the 1900 Purifier House were demolished by the late 1930s. The former Purifier House and the land south of Public Street were sold in January 1917 to Mark Plainfield and Pearl S. Priest, the wife of prominent Cranston textile industrialist, Samuel Priest.

**Samuel Priest, Imperial Warehouse Company, and the Providence Harbor**

The first tenant under the new ownership was the Textile Chemical Company, a concern that moved its operations from industrial space at 180 Public Street in South Providence in 1920 or 1921. Little is known about the extent of this company’s operations or how well its operations were suited to a building conceived for gas purification. City Directories of the period describe the product of Textile Chemical Company simply “dyestuffs and chemicals.” The 1921 Sanborn Map describes “a small amount of manufacturing” in the building, but offers no further information as to its location within the building or the complement of machinery. Textile Chemical Company relocated to Smithfield Avenue, also in Providence, in 1924. The only improvement carried out during this period was the construction ca. 1921 of a brick boiler house attached to the

<sup>14</sup> *Annual Reports* 1904, 1908.

<sup>15</sup> “Gas Co. Plans \$1,000,000 Plant.” *Providence Journal* (16 April 1909): 1. Ellis makes the distinction here between “coal gas,” an earlier method of gas manufacture, and “carbureted water gas,” an improved method developed by inventor Thaddeus Lowe in 1873. Providence Gas Co. used both methods at both plants in the last quarter of the 19<sup>th</sup> century. The company eventually produced water gas alone at South Station.

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southeast corner of the building. Another change of ownership in 1920 gave full title of the property to Samuel and Pearl Priest.

In 1880 at age 11, Samuel Priest emigrated to the United States from Lithuania. He found employment at a Fall River textile mill, learned many aspects of the textile trade and later entered a partnership with his brother in a mill remnant store on North Main Street in Providence. By the late 1890s Priest was operating Samuel Priest and Company, a small textile operation located at the Slater Mill in Pawtucket.

In 1911 Priest purchased at public auction a failed mill in Cranston<sup>16</sup> which he reorganized as Imperial Printing and Finishing Company. Despite difficult economic conditions for Rhode Island textile companies in the early 'teens and health problems after 1918, Priest operated the company successfully into the 1920s. It is not known what motivated Priest to make a substantial investment in a Providence waterfront building. Although Providence had seen a significant decline in maritime activity coincidental with the rise of its industrial base in the 19<sup>th</sup> century, both the City of Providence and the State had made extensive improvements to the harbor on the west bank of the Providence River in the period from 1890 to 1916. These improvements, intended to establish Providence as a center of international shipping, included the laying out of Allens Avenue, the filling in of coves, the removal of a point of land jutting into the waterway near Fields Point, and, most importantly, the construction of a municipal wharf and State Pier No. 1 (1912-1916).

Although Providence had been a major port of entry for immigrants from eastern, central and southern Europe until about 1920 there is no evidence to suggest that the post-1917 use of the building figured significantly in immigration or for maritime shipping and storage. Restrictive immigration laws passed in 1921 and 1924, both playing on an isolationist reaction to World War I, effectively ended Providence's role as an immigration gateway. Samuel Priest's modification of the Purifier House to that of a more traditional four-story warehouse in 1925 may have been carried out to take advantage of a reorientation of waterfront activity toward commerce following the decline of immigration and a general downturn of the Rhode Island textile trade due to southern competition. These possible motivations notwithstanding, the Imperial Warehouse Company, for which the alteration of the building was carried out, went out of business after Priest's death in February 1926. The onset of the Great Depression three years later postponed a significant resumption of commercial and industrial activity on the Providence waterfront until World War II.

<sup>16</sup> This plant, located in the Bellefonte section of Cranston, had been operated as the Turkey Red Dye Company.

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**Mushroom Column and Concrete Slab Construction**

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 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.”<sup>17</sup> 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 1908 A.T. Wall Building in Providence, a building which uses concrete for the spandrel walls and glass curtain walls.

The modification of the Purifier House in 1925 required an insertion of two slab concrete floors supported by concrete columns into the steel frame shell of the building. This work represented a conservative variation from the typical round-section mushroom columns as found in a number of Providence-area early 20<sup>th</sup>-century industrial buildings. On the ground floor, square section columns with a single flange support deep concrete beams. On the second floor an arrangement more typical of Turner’s patent is found: square section columns flare to a square-section capital and pad to the underside of the third floor.

The use of reinforced concrete most likely resulted from a decision that the existing framework would not lend itself well to modification with additional steelwork. Warehouse use required floors capable of heavy loading and the characteristics of the existing frame presented a number of difficulties that could be avoided with a self-supporting concrete structure. Without this adaptation with concrete it is likely that the Purifier House would have been demolished like many other special-use early steel buildings.

<sup>17</sup> Carl W. Condit, *American Building Art: The 20<sup>th</sup> Century* (1961): 167.

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**The Providence Waterfront in the Automobile Era**

By 1931 ownership of the Allens Avenue property had passed to the children of Samuel and Pearl Priest. The former Purifier House housed Whitehall Chemical Company, a manufacturer of soap, for a short while, and Pilgrim Plush, a textile company. Providence Teaming Company occupied the building from 1935 to 1937. A September 1938 hurricane, the arrival of which coincided with an equinoctial high tide, sent a tidal surge up Narragansett Bay that flooded the city and devastated the coastline. The combination of economic depression and natural forces left the building unoccupied until it was leased to City Tire Company, a retailer of automobile and truck tires in 1940.

John Hutchins Cady, in his *Civic and Architectural Development of Providence*, pointed out in 1957 that the once-active wharves, piers and slips of the 19<sup>th</sup>-century Providence harbor gave way in the 20<sup>th</sup> century to extensive fill for parking lots.<sup>18</sup> This surrender of the artifacts of an earlier maritime economy to the auto was compounded by the siting in the late 1950s of Interstate Route 95 parallel to Allens Avenue and into downtown Providence. In this context, the use and further adaptation of the former Purifier House to that of tire retailing and auto service exemplifies a general pattern of 20<sup>th</sup>-century urban accommodation to the automobile and the importance of Allens Avenue, Route 1A, as major auto route prior to the construction of Route I-95.

City Tire Company, the longest tenant of the building (1940 to ca. 2000) built a number of additions, most significantly a two-story south extension of the retail storefront and a six bay service garage in the 1960s. Ownership of the former Purifier House and its subsequent additions was transferred several times between 1995 and 2005. The building is now in the process of rehabilitation and conversion to a conference center, a function facility, and ten artists' studios.

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<sup>18</sup> By 1940 (the year City Tire occupied the Purifier House) "...there were 64 parking lots in operation for profit within a radius of 2000 feet from City Hall covering more than 24 acres of land and accommodating 6000 automobiles." (Cady, p. 263).

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**MAJOR BIBLIOGRAPHICAL REFERENCES**

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“Industrial Notes.” *Providence Journal of Commerce* 4 (April 1896): 55.

“The Advantages Claimed for Brick and Steel Buildings.” *The Iron Age* 56 (19 December 1895): 1272-3.

Tom Peters, “The Rise of the Skyscraper from the Ashes of Chicago,” in *Invention & Technology Magazine*, Vol. 3, #2, 1987.



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**Surveys**

*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**

*Annual Report of the Providence Gas Company (1899-1904)*

On file, National Grid (successor to Providence Gas Co. and New England Gas. Co.), Providence.

**Maps and Engineering Drawings**

City of Providence Plat Maps, 1882, 1908, 1918, 1926, 1937.

Sanborn Fire Insurance Maps 1900, 1904, 1921, 1950, 1956, 1972

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## 10. Geographical Data

Acreege of Property 0.7 acres

### UTM References

(Place additional references on a continuation sheet.)

1	1	9	3	0	0	3	5	0	4	6	3	1	0	4	0
	Zone		Easting						Northing						
2															

3															
	Zone		Easting						Northing						
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 2006

street & number 39 Dyer Avenue

telephone 401 383-9064

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 \_\_\_\_\_

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**GEOGRAPHICAL DATA**

**Boundary Description**

The boundaries of the Providence Gas Company Purifier House are contiguous with Providence Tax Assessor's Plat 46, Lot 630. This lot designation represents a combination in 2005 of former lots 317 and 319 (as shown on the plat detail reproduced below).

**Boundary Justification**

These boundaries, comprising 0.7 acres, define the land historically associated with the operation of the Purifier House of the Providence Gas Company and successive occupants of the building from 1900 to 1956.

