

**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 Richmond Paper Company Mill Complex

other names/site number American Electrical Works, Kennecott Wire and Cable, Okonite, Phillipsdale Landing

**2. Location**

street & number 310 Bourne Avenue  not for publication

city or town East Providence  vicinity

state Rhode Island code RI county Providence code 007 zip code 02916

**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 and 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:

<input type="checkbox"/> entered in the National Register <input type="checkbox"/> See continuation sheet	_____ Signature of the Keeper	_____ Date of Action
<input type="checkbox"/> determined eligible for the National Register <input type="checkbox"/> See continuation sheet.	_____ Signature of the Keeper	_____ Date of Action
<input type="checkbox"/> determined not eligible for the National Register <input type="checkbox"/> See continuation sheet.	_____ Signature of the Keeper	_____ Date of Action
<input type="checkbox"/> removed from the National Register. <input type="checkbox"/> See continuation sheet.	_____ Signature of the Keeper	_____ Date of Action
<input type="checkbox"/> other (explain)	_____ Signature of the Keeper	_____ Date of Action

Richmond Paper Company Mill Complex  
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	
15	3	buildings
		sites
		structures
		objects
15	3	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**

0

**6. Function or Use**

**Historic Functions**

(Enter categories from instructions.)

INDUSTRY: manufacturing facility  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Current Functions**

(Enter categories from instructions.)

INDUSTRY: manufacturing facility  
COMMERCE: warehouse  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**7. Description**

**Architectural Classification**

(Enter categories from instructions.)

OTHER: 19th- and 20th-century industrial  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Materials**

(Enter categories from instructions.)

foundation STONE: granite; CONCRETE  
walls BRICK; METAL: steel;  
CONCRETE: block  
roof METAL: steel; SYNTHETIC: rubber  
other \_\_\_\_\_  
\_\_\_\_\_

**Narrative Description**

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

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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.)

INDUSTRY

ENGINEERING

#### Period of Significance

1883-1935

#### Significant Dates

1883

1893

#### Significant Person

N/A

#### Cultural Affiliation

#### Architect/Builder

Austin Company

Stuart, James, and Cook, Engineers

#### Primary location of additional data:

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

Name of repository

RI Historical Society Library

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**10. Geographical Data**

**Acreage of Property** 13 acres

**UTM References**

(Place additional references on a continuation sheet.)

1	1	9	3	0	3	0	8	1	4	6	3	4	8	8	8
	Zone		Easting					Northing							
2	1	9	3	0	3	3	4	7	4	6	3	4	8	2	5

3	1	9	3	0	3	2	7	4	4	6	3	4	5	5	9
	Zone		Easting					Northing							
4	1	9	3	0	2	9	9	6	4	6	3	4	6	2	7

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

organization Edward Connors and Associates date February 2006

street & number PO Box 154522 telephone 401 595-0699

city or town Riverside state RI 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 Essex River Phillipsdale LLC

street & number 225 Friend Street, 7<sup>th</sup> Floor telephone 617 742-2299

city or town Boston state MA zip code 02114

**Paperwork Reduction Act Statement:** This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and amend listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*).

**Estimated Burden Statement:** Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20503

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Richmond Paper Company Mill Complex

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**DESCRIPTION**

**General**

The Richmond Paper Company<sup>1</sup> complex is a group of late 19<sup>th</sup>- to mid-20<sup>th</sup>-century, one- to three-story, predominantly brick buildings sited on a roughly 13-acre waterfront site bounded by the Seekonk River on the west, Bourne Avenue on the north, the now-cleared property of the former Washburn Wire Company on the south, and the tracks of the Providence and Worcester Railroad on the east.

This waterfront section of East Providence, where the Ten Mile River drains into the Seekonk River, has been known as Phillipsdale since 1893, and began attracting relatively small-scale, waterpowered industrial development in the 18<sup>th</sup> century. The introduction of rail service in 1874, the ready availability of anthracite coal, and, in 1883, the creation of Paper Mill (now Omega) Pond, a source of process water, dramatically expanded this development.

Richmond Paper Company built the earliest seven buildings at the site between 1883 and 1887. The original complex of about fourteen buildings extended from Building 1 west to Building 14. Seven buildings survive with varying degrees of integrity due to subsequent re-use and adaptation. These include Building 1, which housed the front office and finishing operations; Buildings 2, 3, and 4, which housed the north and south Machine Rooms as well as a carpenter and machine shop; Buildings 8 and 9, which housed engine and boiler rooms; and Building 14, which housed the digesters that chemically reduced wood chips to paper pulp.

After Richmond's failure in 1887 and the subsequent auction of its equipment in 1889, the plant lay vacant for four years until it was purchased at public auction in 1893 by Eugene Phillips and adapted for wire manufacture. Phillips' company, American Electrical Works (AEW), a pioneer in the manufacture of insulated wire, occupied and made significant alterations to the plant until 1934, when it was acquired by Kennecott Wire and Cable for a similar use.

By 1900 AEW had built a new rolling mill in the vicinity of the Richmond boiler house (Building 9), the first major adaptation of the former Richmond plant for the wire manufacture. In the same year the company built Building 22, a three-story shipping building served by a rail siding along its south elevation.<sup>2</sup>

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<sup>1</sup> This complex has been called Phillipsdale Landing since 1987.

<sup>2</sup> This construction coincided with Eugene Phillips' brief association with Charles Washburn of the Worcester wire manufacturing family. Washburn left Washburn and Moen when it was acquired by American Steel and Wire in 1899, entering a partnership with Eugene Phillips the following year. In 1900 Washburn Wire Company built an open hearth furnace to the immediate south of the AEW works. Although Charles Washburn left the partnership shortly after, Phillips continued to operate it as a wire manufacturing

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A major AEW building campaign from World War I through the 1920s included the north and south segments of Building 15 (1917 and 1922, respectively), which originally stood separate from the rear elevation of Building 14. Cable Building 67, a deep single-story, clear span structure, was constructed as a 275' x 80' building in 1924 and added to over the next several years. This building was connected to Building 75 ca 1960.

During the late 1920s AEW carried out significant demolition of the Richmond plant. This demolition included six buildings used for various aspects of the preparation of pulp and an earlier AEW-built storehouse to the immediate north of Building 9.<sup>3</sup> AEW had adapted these buildings for wire manufacture and used them for about thirty years, demolishing them in 1928 for the construction of a massive, single-story, saw-toothed roof wire mill (Building 70).<sup>4</sup> Construction of this building necessitated the demolition of about half the length of the Richmond engine room (Building 8), the remaining half survives. Other construction of this era included a new office building (Building 75, 1926), a first aid building (Building 76, 1926), a two-story machine shop (Building 68, 1927), and a copper rod mill (Building 69, 1928). Three steel utilitarian buildings (Buildings 50, 80 and 82) date to ca 1957.

This plant is the physical expression of a century of industrial activity, the continuing adaptation and expansion of a 19<sup>th</sup>-century paper mill for the purposes of wire manufacture into the 1920s, and, at present, mixed commercial use. Eighteen buildings (14 contributing and 4 non-contributing) are inventoried below.<sup>5</sup>

**Inventory**

Contributing buildings are those built during the period of significance that retain all or most of their original features. Non-contributing buildings are those built after the period of significance, altered in such a way as to no longer resemble the original structure, or temporary buildings.

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plant under the name Washburn Wire Co. This plant, now demolished, was expanded over the years and closed in 1982. The demolition of this plant was completed in 2005. The now-open, waterfront space south of Phillipsdale Landing recalls the period between 1882 and 1900 when this was an open yard served by a narrow-gauge rail.

<sup>3</sup> This Store Room may have been an alteration of Richmond's former Pulp House (see Figure 3) that extended it southerly to the north wall of the Boiler House. By 1921 it was used as a rolling mill.

<sup>4</sup> The brick east wall of this building is all that remains of Richmond Paper Company's screen room, a building that housed two steam engines and a screening process for removing impurities from the pulp.

<sup>5</sup> Omega Pond was created by Richmond Paper Company as Papermill Pond in 1883. Before this time, there was a tidal cove called Seekonk Cove where the Ten Mile River flowed into tidewater. Richmond's damming of this cove created the pond as we see it today. There have been changes in ownership of the dam and pond over the years and, for this reason, the combined structure incorporating the 1918 Omega Pond Dam (built by East Providence Water Supply) and the 1918 Omega Pond Railroad Bridge (built by the NYNY&H Railroad) is not included in this nomination.

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The following buildings are inventoried in order of their dates of construction. The numbering scheme is based on a convention established by American Electrical Works in the early 20<sup>th</sup> century.

All buildings in this complex are roofed with rubber membrane. For the most part, buildings 1 through 14, dating from the Richmond Paper period (1883–1887), shared these original features: brick, pier and spandrel construction; granite foundation; slow-burning timber beams and columns with plank-on-beam flooring; slate- and gravel-covered gambrel or shallow-gable roofs; segmental arch window and door openings; and elaborate cornice corbelling that continued linearly across the gambrel ends. Exceptions to this standard are noted below.

**Building 1, Finishing Room/Office (1883):** A single-story (with attic and basement), pier and spandrel, brick, 200' x 42', building on a granite foundation<sup>6</sup> with a central, 26' x 27' modified two-story tower. These tower modifications include a relocation of the front entrance to the north side of the tower, filling the original entrance with glass brick, and removal of the original pyramidal roof that housed a water tank for the plant's sprinkler system. Although built as a two-story tower, a relatively recent alteration involved the insertion of steel beams to divide the first floor into two shallow stories. A roughly 85' x 27' cement block enclosure now covers the façade south of the tower. The original south façade exterior wall now serves as an interior wall. The central section of the rear wall of this building once opened into a courtyard, now enclosed within Building 3. Brick and window detailing matching that of other exterior walls survives in this location.

About 1926, AEW altered the façade and north elevation of this building with the removal of the tower's pyramidal roof and the addition of a roughly 48" parapet resting on a concrete belt course. This parapet extends along the façade, the north gambrel end, and continues along the north elevation of adjacent Building 2. Brick detailing on this parapet matches that of AEW Buildings 75 and 76. The original 1883 gambrel roofline of the south elevation of this building is unaltered and no comparable parapet appears on the south wall of adjacent Building 4.<sup>7</sup>

Many original windows survive. These are a mix of wood-frame, 16/16, double-hung sash, set in segmental arch openings on the first floor and single, 16-light sash on the second. These windows are not cut to match the segmental arch. Sills are quarry-faced granite. Modern doorways have been cut into the north and south elevations.

<sup>6</sup> Further analysis may demonstrate that the visible concrete footings are set on a wetlaid fieldstone foundation.

<sup>7</sup> It is unclear why AEW chose to alter only the façade and north elevation of this building. It is possible that the south elevation's immediate proximity to the extensive plant of Washburn Wire and the general invisibility of this part of the building to commercial traffic rendered the improvement unnecessary.

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The ground floor of this building is a clear span. The north third of the original floor plan and the tower were used for Richmond's offices. The rest of the building was used for paper finishing and shipping operations. During the AEW and Kennecott period, the building was adapted for use as a wire braiding room.

At present, the building is occupied by two commercial tenants. The basement, used as a jute and yarn room by AEW, now serves as a maintenance area.<sup>8</sup>

*General note on Buildings 2, 3, and 4: The original rear (west) wall of these buildings was shared with Richmond's Screen Room, three walls of which were demolished in 1928 for the erection of Building 70. This west wall was not demolished and, although altered with a new passageway to Building 70, continues to serve as the west wall of Buildings 2, 3, 4 and a non-structural east wall of Building 70. Several original arched openings are bricked-in.*

**Building 2, North Machine Room (ca 1887):** A rectangular plan, brick, pier and spandrel, deep single story, 150' x 59' building with a gable roof. AEW altered the north (and most visible) wall of this building ca 1926. This alteration included removal of the original segmental arch windows and installation of steel-frame windows grouped in threes: two 18-light windows with a six-light hopper flanking a central 24-light window with an eight-light hopper. It also included the addition of a 48"-high parapet resting on a concrete beltcourse (see Building 1). Brick detailing on this parapet matches that of Buildings 75 and 76 (1926). The segmental arch double doorway at the east end of this elevation and two arched window openings (now brick-filled) at the west end of this wall date to the original construction.

Timber roof trusses provide a clear interior span. The floor is concrete.

Although intended to house two Fourdrinier papermaking machines, this building was still unfinished at the time of an 1884 insurance survey. It was likely completed by 1887, the year Richmond closed. AEW adapted it for use as a cable room; Kennecott converted it for use as a wire braiding room. It is currently used for industrial storage.

**Building 3, Little Wet Room, Carpenter Shop, Machine Shop (1883 et seq.):** This brick, single story, 150' x 42' building, occupying the space between Buildings 2 and 4, has a complex history. There is physical evidence of three distinct sections and documentary evidence of three different industrial functions. According to the 1884 insurance survey, this building comprised only the central section (see below), a wing running

<sup>8</sup> Until recently this building's original hydraulic elevator was located in the basement. Although it has been removed, some of the water pipes for its operation are still in place.

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perpendicular to Buildings 2 and 4 and flanked on the east and west by open courtyards.<sup>9</sup> By 1887, the last year of Richmond's operation, the west courtyard had been roofed over for use as a machine shop. The east courtyard remained open. By 1920, AEW was using all three sections as a machine shop; Kennecott converted it for use as a wire polishing building. It is used currently for storage.

**Central section.** The central and oldest section originally served as a single-story, shallow-gable roofed, perpendicular passage between Buildings 2 and 4, and was intended to house Richmond's Little Wet Room.<sup>10</sup> It does not appear, however, that Richmond ever used this space in the papermaking process. An 1887 building plan labeled this section of Building 3 as a carpenter shop. The original west wall of this building was removed and replaced with an *I*-beam supported by steel columns of unknown date. The east wall survives with a modern passageway and several original segmental arch exterior windows, now bricked-in. Two segmental arched openings provide passage to Building 2.

**West (rear) section.** Before 1887, Richmond had erected a timber trussed roof over the rear (west) courtyard for use as a machine shop. Three of the original walls are intact. Although windows have been removed, most of the segmental arch openings remain.

**East (front) section.** The east section of Building 3 remained an open courtyard until about 1920, when it was combined with the east section of Building 4 and roofed over to form a deep single-story room with a metal truss roof. To support this roof, part of the existing brick walls of Buildings 2 and 4 were raised to form gables and glazed with metal frame windows typical of the period. Among other uses, AEW used the space as a pipe and leading room.

The east exterior wall of the Richmond Little Wet Room (central section of Building 3) survives as an interior wall running north to south within the footprint of Building 3.

**Building 4, South Machine Room (1883):** Similar to Building 2, a rectangular plan, brick, pier and spandrel, deep single story, 150' x 59' building with a timber truss gable roof.

This building originally housed two Fourdrinier papermaking machines. AEW adapted it for use as a dipping room; Kennecott continued to use it for the same purpose. It is currently used for storage.

<sup>9</sup> Buildings 2, 3 and 4 share an east and west wall. The east wall is shared with Building 1 and the west wall is all that remains of the former Richmond screen house.

<sup>10</sup> Walden's Paper Catalog (<http://www.papercatalog.com/glossary/default.asp?ltr=W>) describes a "wet machine" as a "cylinder type papermaking machine used to make certain types of board, and also to achieve partial drying of pulp to permit folding into laps."

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By 1935 AEW had begun additions to the south wall of this building. The first addition was a 46' x 20' brick absorber room built at the east end. A relatively recent addition involved the erection of a steel enclosure with loading ramp. This addition now encloses completely the south wall of Building 4.

**Building 8, Engine Room (1883):** A brick, pier and spandrel, single-story, 44' x 36' building with a gambrel roof and corbelling matching that of Building 1. Constructed as an Engine room for the Richmond plant, this building originally housed a 500 HP steam engine<sup>11</sup> and was directly connected to the northeast corner of the boiler house (Building 9).

AEW continued to use this as an engine room until the construction of Building 70 in 1928. At that time the company demolished the western half of the original 75' length of the building, constructing a stepped parapet at the point where the old roof met the new; it was converted for use as a generator room. By 1901 AEW had constructed an adjacent dynamo room within a now-demolished building. It is likely that the engine-dynamo combination served to provide electricity for the plant during a period of transition that preceded tie-in to the Narragansett Electric grid, a process that appears to have been completed by 1920, at which time the building was not in use.<sup>12</sup> Serving originally as a switchboard room<sup>13</sup>, AEW added a single-story, 12' x 36' shed-roofed addition to the front elevation of this building in 1920.

**Building 9, Boiler House (1883):** Similar to Building 8, a brick, pier and spandrel, single-story, 159' x 41' building on a granite foundation. The original gambrel roof has been altered to a gable; the original brick floor (a few feet below grade) has been raised and replaced with a concrete floor at grade.<sup>14</sup> Original oculi, now brick-filled, are visible at both gable ends from the interior of the building. Windows openings are segmental arch with quarry-faced granite sills. These openings are now filled with plywood or plexiglass lights. An original monitor was likely removed when the roof was altered. A modern garage door is found on the east elevation.

This building remained in service as a boiler house until around the time of the construction of Building 70. At that time the chimney was removed and the building was converted for wire reel storage and an annealing room. During the Kennecott occupancy, this building housed rod storage and cleaning. AEW built two lean-to additions on the south elevation; these served as cleaning and electrolytic rooms.

<sup>11</sup> There is contradictory evidence as to this power system. It may have been two 250 HP engines.

<sup>12</sup> See the 1899-1900 and 1920-21 Sanborn Fire Insurance Maps.

<sup>13</sup> It is unknown whether this room was used for telephone switching purposes or for switching associated with the plant's electrical service.

<sup>14</sup> Some indication of the depth of the original floor is given by a series of now-filled segmental arch openings only partly visible near the present floor level.

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**Building 14, Digester House (1883):** A three-story (with attic), brick, pier-and-spandrel, 160' x 60' building with gambrel roof and corbelling matching that of Building 1. Construction is slow-burning; heavy plank-on-timber flooring with chamfered wooden columns. The third floor is a clear span as the ceiling is suspended from the roof trusses. Some of the floor beams and columns have been reinforced with steel beams. Windows are double-hung, wood-frame, 16/16 on the first floor and 12/12 on the upper floors. Sills are quarry-faced granite. The original slate and gravel roof has been replaced with rubber membrane. An enclosed bridge from the south elevation chip tower was removed by AEW when the building was converted for use in the manufacture of rubber-coated wire.

This is the most important building of the Richmond plant and the site of the most significant technical innovation and experimentation. The term "digester" refers to the chemical process of reducing wood chips to pulp. According to the 1884 Barlow's insurance survey, the

...first, second, and third stories are open into one [story], and contain boilers or 'digesters' for boiling pulp. Attic, bins containing chips, which are spouted to boilers.

AEW altered this floor system to the present arrangement when it converted the building for use as a rubber mill between 1893 and 1899. In 1927 the company hired Otis Elevator to build a brick elevator tower on the rear (west elevation) of the building. This tower, now enclosed within the footprint of Building 15, houses elevator machinery that appears to date to the late 1920s.<sup>15</sup>

Modern metal doors are found on the north and east elevations. This building stood alone until sometime around 1958. By that time the various components of Building 15 had been incorporated into one building and tied in to the rear wall of Building 14. A single-story, brick lean-to and a steel-frame infill building are found in the crook formed by Buildings 14 and 15.

*The following seven buildings represent the adaptation and expansion of the Richmond Paper plant by the American Electrical Works between 1900 and 1928. A number of these buildings have complete or partial wood block floors consisting of 2" x 2" x 4" hardwood blocks (Buildings 22, 67, 68, and 70). AEW also installed this flooring in the former Richmond digester house (Building 14).*

**Building 22, Shipping Building (1900, Stuart, James and Cook, Engineers, New York):** A three-story, roughly 228' x 60', brick building with a shallow-pitched gabled roof and a southwest corner chimney removed above the roofline. The foundation is concrete, as is a loading dock running the length of the north and east

<sup>15</sup> The original 1927 contract for this elevator and that of Building 22 are in the possession of Essex River Phillipsdale.

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elevations. From 1900 to 1928, a rail line and loading dock ran the length of the south elevation. At that time AEW built Wire Mill 70, which is connected to this building.

Windows are predominantly original segmental arch, 12/12, paired, wood-frame, double-hung sash with a fixed, three-light transom. Sills are quarry-faced granite. A few modern windows are found on the third floor. Three central, stacked, double wood-frame doors are found on the east elevation. Original doors occur at regular intervals along the north loading dock. Although many of the lights are painted white, much of the fenestration on the west elevation upper floors is original. There has been some alteration of first floor windows on this elevation, including partial brick fill of one segmental arch. Two modern metal doors are also found on this elevation.

Interior framing consists of plank on timber beams supported by chamfered wooden columns. The ground floor is a mix of concrete and hardwood block. Flooring on the upper levels consists of a 4½" subfloor surfaced with 1" hardwood, now covered with plywood or steel plate.

AEW used the first floor of this building as a supply room in 1920. Upper floors were used for wire manufacture. The internal elevator shaft on the south wall was built by AEW in 1927.

**Building 15, Enameling Building (1917, 1921, 1958):** This building has a complex history. Between 1917 and ca 1958, two separate brick buildings and infill came to comprise what is now Building 15. There is, however, some discrepancy in the documentary record as to when the three components of this building were physically joined to the rear (west) wall of Building 14 to form the 170' x 42', deep single-story structure as it appears now. Although the roofing over of the alleyway between Building 14 and the freestanding Building 15 appears on a 1935 (revised 1943) Factory Mutual drawing, the 1956 Sanborn drawing continues to show an open alleyway between Building 14 and a narrow, 170' x 22', Building 15. Ca 1958, Kennecott ran steel beams from the west elevation of Building 14 to support a pitched roof over the former alleyway and most of Building 15. This formed the deep, single-story building as we see it today.

Features common to the three phases of the building include brick construction, concrete foundation, segmental arch window and door openings, and modern, metal doors.

Enameling is a process of coating bare wire with liquid enamel for insulation purposes. The process involved drying time and the two metal-sheathed towers appear to have been built for that purpose.

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**North section.** The northernmost, 8-bay, 83' x 22' section of this building originally was a wood frame, one- and two-story, free-standing structure, built by AEW in 1917 as an enameling room.<sup>16</sup> According to the 1921 Sanborn map, the northernmost 12' of the building was two-stories tall, the remainder one-story. It is unclear as to when AEW rebuilt this as a brick building.

The roof is slightly pitched. Segmental arch windows are plywood- or brick-filled. A modern north elevation garage door opens onto a raised loading area.

**South section.** The southernmost, seven-bay, 71' x 22' section was likely built in 1922. Fenestration on the west elevation consists of an upper row of wood-frame, 24-light windows and a lower row of segmental arch openings, now plywood-filled.<sup>17</sup> An oculus on the south gable is now a vent. A modern south elevation door opens onto a loading dock. Two ground floor segmental arch openings on the south elevation are brick-filled.

**Middle section.** This 2-bay section of the building appears to be low, single-story infill between the north and south sections. It consists of a modern doorway and two segmental arch openings now filled with plexiglass or plywood. By 1935, AEW had constructed an elevator on the rear elevation of Building 14. Although this elevator falls within the footprint of Building 15, it serves Building 14.<sup>18</sup>

At present, this building is used for refurbishing of printing presses and related machinery.

**Building 67, Cable Building (1924, 1927, ca 1960, Austin Company, New York and Philadelphia, builders):** A steel frame, deep single-story, 493' x 80' clear-span building with north and south curtain walls of metal frame windows resting on brick kneewalls and a concrete foundation. This building was constructed in three phases. The original 275' section was built in 1924. In 1927, AEW added 100' to the west end and 97' to the east end of the building. About 1960, Kennecott added a 21' extension comprising a south garage door opening and incorporating the west wall of Building 75. An open, steel overhead walkway (built between 1924 and 1935) provides communication to Building 22.

<sup>16</sup> This early form of the building appears as a frame structure in the 1917 Richards Atlas map. It is unclear as to whether this frame building predates 1917 and was replaced in that year by a brick building of a similar footprint.

<sup>17</sup> Segmental arch windows on the other visible (south) elevation are mixed: 12-light, 6/1, or T-1-11 filled.

<sup>18</sup> Based on a January 2006 interview with elevator technicians, some of the machinery of this elevator appears to date to the late 1920s.

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The shallow roof trusses are steel. Electric cranes move along a continuous track running the length of the building. The floor is wood block. A roofed 100' loading dock serves part of the south side of the building. Three north elevation garage doors are post-1987.

Windows are two tiers of steel-frame industrial sash with a concrete sill, typical of the period. These are a mix of 24 light with a four-light hopper, 30-light with a six-light hopper, and 36-light with an eight-light hopper. Over the west loading dock, the windows are 12-light. By 1935 a brick, 30' x 10' washroom was placed near the overhead walkway and a 20' x 20' addition was added to the east wall.

This building served in the manufacture of heavy cable. It is now occupied by CAPCO, a structural steel fabrication company.

**Building 68, Machine Shop (1928, Austin Company, New York and Philadelphia, builders):** A 128' x 108', brick, single-story building with a mezzanine. It has a shallow-pitched, gable roof and full monitor. The central section of the building is a deep single story, built to accommodate a pit for locomotive repair.<sup>19</sup> This building served as the AEW machine shop. Interior spaces, arrayed to the east and west of this central area, included a tool room, foundry, blacksmith shop, electrical room, pipe shop, stockroom, office, and locker room. The second floor was used as an electrical room, patternmaking room, and for storage.

There is a plain brick chimney on the west elevation. Windows are steel-frame industrial type: 20-light with an eight-light hopper or 25-light with no hopper. While there are brick divisions between groups of windows on the ground floor, the upper story is a continuous band. Entrances include two modern, metal garage doors (on the north and east elevations) and a double, wood-frame door on the west elevation that may be original to the building. There are several other doorways, including an altered door on the south elevation that may be, in part, original.

This building is now used for commercial storage.

**Building 75, Office (1926):** A brick, flat-roofed, pier and spandrel, 110' x 141', single-story building on a raised basement. A parapet matches those of Buildings 1, 2, and 76. This U-plan building was designed to open onto Bourne Avenue, the location of its main front entrance. The entrance commonly used, however, is at the rear (south) side of the building. The west wall of the building was incorporated into Bldg 67 ca 1960. In order to match the height of the neighboring Building 67, Kennecott added several courses of cement block to the height of the existing brick.

<sup>19</sup> AEW had a system of light-gauge rails serving different parts of the plant. This pit was filled in after 1987.

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Double hung, wood-frame, 2/2 basement windows appear to be original. First floor windows are set in rectangular openings with a flat arched lintel and a concrete sill. A formed copper dentil cornice defines the roofline at the base of the parapet.

This building was subdivided into several office and administrative spaces for AEW and Kennecott. Now leased to various commercial tenants, it serves a similar purpose today.

Original architectural drawings of this building survive. Front entrance lamps rendered in these drawings are shown as a human arm extending out from the wall and holding a globe. This design may be a reference to Eugene Phillips' original corporate symbol as shown in Additional Information section, Figure 4.

**Building 76, First Aid building (1926):** Similar to Building 75. Building 76 is a brick, 52' x 22', single-story, pier and spandrel building with a flat roof and parapet. A north elevation entrance opens into a series of small rooms originally intended for medical and administrative purposes. This entrance is of modern construction, as are the windows set in original rectangular openings.

This building presently serves as administrative space for Essex River Ventures.

**Building 70, Wire Mill (1928):** A deep single-story, steel frame, 293' x 228' building with five bays of saw-tooth roof monitors supported by steel *I*-columns. The west elevation, a near-continuous band of rectangular, steel frame windows resting on a brick curtain wall, is the only fully-exposed wall of this building. Lower windows are 28-light with an eight-light hopper. Upper windows are 24-light with an eight-light hopper. Three doors open onto the alley between Buildings 70 and 14. A modern garage door provides entry from the east loading dock shared with Building 22. The east wall of this building is the old brick wall of the Richmond Paper Screen Room (see general note for Buildings 2, 3, and 4). An altered passage through the abovementioned wall provides communication between this building and Building 3.

AEW carried out significant demolition of the old Richmond Paper plant for this spinning, drawing, tinning, and cold-rolling mill.

**Building 69, Copper Rod Mill (1927–1928, Austin Company, New York and Philadelphia, builders):** A 180' x 83' overall, deep single-story, steel frame building on a raised concrete foundation with a brick curtain wall. There are two perpendicular wings, each with its own steel roof truss sheathed in corrugated steel panel. The building is essentially clear span, the only steel *I*-columns occurring at the point where the two perpendicular wings meet. Although some rectangular, steel frame windows survive, most original window

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openings are cement block filled. Between 1926 and 1935 AEW built a 62' x 15' addition to the south side to house a motor room.

The east wall of this building incorporates the west wall of Richmond Paper boiler house (q.v.). Visible on this once-exterior wall from the interior of Building 69 are a brick-filled oculus, a light gauge rail door opening (brick-filled) for the coal cars that served the boilers and the gambrel roofline altered by AEW to the present gable form.

AEW used this building for drawing and extrusion of copper rod. It is now used for assembly of large, wooden industrial reels.<sup>20</sup>

**Non-contributing Buildings**

**Building 50, Reel Shop (ca 1957):** A single-story, 200' x 60', steel-frame, utility building resting on a concrete foundation and sheathed in pressed steel panels. The roof is corrugated steel panel.

**Building 80, Boiler Building (ca 1980):** A single-story, 80' x 20', steel-frame, utility building on a concrete foundation and sheathed in pressed steel panels. The roof is corrugated steel panel. This building contains several boilers for the plant's heating system.

**Building 82, Storage Shed (ca 1957):** A single-story, 85' x 85', steel-frame, utility building resting on a concrete foundation and sheathed in pressed steel panels. The roof is corrugated steel panel.

<sup>20</sup> The current tenant of this building, Sonoco, produces reels for Okonite, the company that once owned the entire complex.

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**SIGNIFICANCE**

The Richmond Paper Company Mill/American Electrical Works is the physical expression of a century of industrial innovation, adaptation and expansion. Richmond Paper Company (1883–1887), although commercially unsuccessful, introduced to North America the technology of chemical pulping of wood for paper manufacture, a technology that dominated American paper manufacture until the 1950s. Eugene Phillips, an important innovator in insulated wire manufacture at the dawn of the electrical age, moved his American Electrical Works (1870–1935) from Providence to the vacant Richmond plant in 1893, adapting and expanding it for wire manufacture. Kennecott Wire and Cable acquired the American Electrical Works plant in 1934 and operated it until 1982. The complex is representative of a pattern of industrial innovation, rise and decline seen throughout New England in the 20<sup>th</sup> century. Of the fourteen contributing buildings in the complex, several are good examples of the evolution of industrial architecture through the late 19<sup>th</sup> and early-20<sup>th</sup> centuries.

**History of the site**

It is likely that Roger Williams understood the industrial potential of the Ten Mile River when he settled along Seekonk Cove in 1635. The potential to dam the river for the purpose of erecting a grist mill was delayed for a few generations when Williams discovered that his Seekonk settlement was still under the authority of the Plymouth Colony.<sup>21</sup> Despite the relocation of Williams and his company to Providence, by the mid-17<sup>th</sup> century an agricultural settlement developed in the area served by small-scale, waterpowered country mills.

This area, called the Seekonk Plains, remained predominantly agricultural until 1857, when George Wilson purchased a roughly 800-acre tract of land extending from what is now the Rumford/Seekonk line to the shores of the Seekonk River. Three years earlier, Wilson and Professor Eban Horsford had established the Rumford Chemical Works in Providence for the manufacture of baking chemicals. Horace Greeley, in his 1872 essay on American chemical manufactures, described the potential of the area:

When Mr. Wilson first removed to Seekonk Plains they presented to an ordinary observer few or no attractions for any purpose whatsoever. But his eye saw in the barren waste cheap building-sites and rich gardens, busy commerce in idle wharf sites, rapid and cheap transportation in a railroad then but half-occupied, ample power and wealth in an abundance of pure water, (the latter a consideration of no little importance to the Works he had determined to build,) and last, but not least, health in the pure atmosphere of the elevated plain.<sup>22</sup>

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<sup>21</sup> Williams' subsequent removal to the banks of the Moshassuck River in Providence yielded a waterpowered gristmill within seven years of his arrival.

<sup>22</sup> See essay on Chemical Manufactures in Greeley et al, *The Great Industries of the United States*, p. 1108.

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Wilson built his main plant at Seekonk Center (later renamed Rumford) and, by 1863, an auxiliary operation called “Riverside” on the banks of the Seekonk. In this area, north of Bourne Avenue (after 1899, the location of the Sayles Bleachery), Wilson erected a small steel works, an agricultural operation, and a manufacturing plant for primary chemicals required for manufacture at the main plant.

In 1874, the Providence and Worcester Rail Road, in an effort to avoid the congestion of rail traffic in Providence and to access newly-established anthracite coal piers on the East Providence waterfront, laid out an East Providence branch line from Valley Falls south through Pawtucket and along the Seekonk River. Rail and coal accessibility, combined with open land and plentiful process water, made Wilson’s “Riverside” a prime industrial site.

**The Richmond Paper Company**

In 1883 George Wilson sold an unused, 25-acre waterfront parcel south of Bourne Avenue to Franklin H. Richmond (1820–1898), a Providence cotton and cotton waste dealer. Richmond and others had incorporated the Richmond Paper Company a year earlier for the purpose of exploiting an American license for a chemical pulping technology used on a limited commercial basis in Sweden.

Richmond had become involved in papermaking in the 1840s. He and his brother Charles had received a corporate charter in 1867 for the Richmond Paper Company but had failed to organize the company at that time. The charter was revived in 1879. This re-entry into paper manufacturing may have been due to the influence of Charles Storey Wheelwright (1847–1913), who had married Richmond’s daughter, Anna, in 1869. Wheelwright came from a well-established family of 19<sup>th</sup>-century Massachusetts papermakers. After service in the Civil War and a period of time in the family business in Fitchburg and Leominster, Wheelwright moved to Providence in 1874 to form a partnership with his father-in-law.

It is likely that Wheelwright, a paper manufacturer and self-taught engineer, was aware of technological developments in the paper industry that pointed toward the use of chemical solvents to reduce wood chips to paper pulp. Although mechanical grinding and other methods using hydrolysis to “cook” the chips under steam and pressure yielded pulp, the quality of the paper produced was relatively poor compared to the earlier artisan technology that used cotton and linen waste.

In 1867 Benjamin Tilghman of Philadelphia was granted a U.S. patent for an acid-based chemical process that dissolved lignin, the binding material of wood, while leaving the pure wood cellulose relatively undamaged. This process “digested” wood chips into pulp through a pressurized cooking process utilizing

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calcium bisulfite as a digesting liquor. Tilghman had refined this process at the paper mill of W.W. Harding in Manayunk, Pennsylvania. While chemically successful, Tilghman never refined the process to the point where he could produce pulp commercially and subsequently abandoned the experimentation.

Carl Daniel Ekman, a Swedish chemist likely unaware of Tilghman's work in the U.S., was working along similar lines in the early 1870s. Working with an English chemist, George Fry, Ekman had produced a high quality of pulp using a magnesium bisulfite liquor, similar to that of Tilghman. By 1874, Ekman was operating a commercially successful, small-scale paper mill in Bergvik, Sweden, using this sulfite process.

Charles Wheelwright traveled to Bergvik in 1882 to observe Ekman's process firsthand and was impressed with the quality of the pulp and paper produced. Acting on behalf of investors W.F. and F.C Sayles, Wheelwright acquired the American license for the Ekman process. Shortly after, the Richmond Paper Company purchased 25 acres of land between the Providence and Worcester rail line and the Seekonk River for the establishment of an extensive sulfite pulping mill. Wheelwright intended to perfect Ekman's process and produce pulp on a commercially viable scale.

The plant, built between 1883 and 1885, comprised seventeen substantial brick buildings, the functions of which covered all aspects of sulfite pulping and paper manufacture.<sup>23</sup> Coal for power, magnesite and sulfur for chemical refinement into digesting liquor, and raw coniferous wood were shipped to the plant via rail. Wood chips and liquor were charged into the digesters of Building 14. After the cooking process, the pulp was cleaned, bleached, and treated in a now-demolished central group of buildings in the general location of Building 70.

From these buildings, the treated pulp moved to a group of surviving buildings (Bldgs. 2, 3 and 4) for the manufacture of paper. Building 4 housed two Fourdrinier machines. These European machines, introduced into the U.S. in 1827, represented a substantial investment. In order to render liquid pulp into paper, pulp (roughly 95% water) was poured onto the moving, vibrating screen of the Fourdrinier machine where the excess water was suctioned off from below. The vibration caused the "felting" or alignment of the cellulose fibers into

<sup>23</sup> It is as yet unknown what role Wheelwright's younger brother Edmund March Wheelwright might have played in the design of the plant. A ledger in the Wheelwright papers at Boston Public Library describes a commission for a rooming house for Richmond Paper Company in 1887. This could be one of the older tenement houses located "near the railroad crossing" of Roger Williams Avenue as described in a 1907 *Providence Journal* article, "Phillipsdale" Rhode Island's Magic Village," (15 Sept. 1907). Shortly after his work for Richmond, E.M. Wheelwright was hired by the Howland Mill in New Bedford to design a picturesque worker village for the company. Plainly visible from the front tower of Building 1 is a series of three gambrel roof duplexes on the east side of Roger Williams Avenue. These are very similar in design to the gambrel roof houses Wheelwright designed for Howland. For a detailed study of this village, see Kingston Heath, "The Howland Mill Village: A Missing Chapter in American Workers' Housing." *Old Time New England* 75 (1997): 65-111.

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paper, which, through pressure and other drying processes, eventually yielded a 60" web of paper. From this point, the paper moved into Building 1 for cutting, finishing, wrapping, and shipping.

Although Richmond produced about 15 tons per day of high quality paper from late 1885 to late 1887, the process was plagued with technical difficulties, most having to do with the digesters and liquor towers in Building 1. The nature and extent of these difficulties and the patented devices for addressing them are discussed at length in Griffin and Little's *The Chemistry of Papermaking* (1894), the first book to treat in a thorough and systematic way the chemical processes used to manufacture paper.

The authors, Roger B. Griffin and Arthur D. Little, both worked as staff chemists at the Richmond plant.<sup>24</sup> The field of industrial chemistry was brand new at this time. One remarkable feature of the endless empirical perfecting of the sulfite process was the fact that the molecular formulas for both cellulose and lignin were unknown at the time of Richmond's operation. After Richmond's failure, Griffin and Little formed a partnership for chemical analysis of industrial processes. Roger Griffin died in a lab accident in 1893, and Little went on to form the major research and development company that bore his name.

In a 1922 letter to the trade publication, *Paper World*, Little wrote:

The credit for the reintroduction of the sulphite process, after the abandonment by Tilghman of his experiments, belongs...to Charles S. Wheelwright, who, with his associates, acquired the Eckman patents and organized the Richmond Paper Company.<sup>25</sup>

Griffin and Little were not alone in their interaction with Wheelwright in the troubleshooting of the paper mill. Carl Daniel Ekman, the Swedish chemist who had developed the magnesium bisulfite process and overseen the plant at Bergvik, came to work at Richmond in early 1884.<sup>26</sup> Arthur D. Little's biography, while scant on details of the Richmond years, offers some insight into his employment there:

<sup>24</sup> The lab was located near the digester house (Bldg. 14) in the cluster of buildings demolished in 1928 for Building 70. At age 23, Arthur D. Little had interrupted his undergraduate work at MIT in 1884 to come to work for Richmond Paper. After Griffin's departure, little worked at the plant in a managerial capacity as well as that of chemist.

<sup>25</sup> Arthur D. Little, "The First Sulphite Mill In America," *Paper World* 50 (22 June 1922): 43. Charles Wheelwright acquired seven U.S. patents, four issued during the Richmond period. These include 307,608 (November 1884), "Pulp Digester;" 307,609 (November 1884) "Treating Wood Pulp" (with George Marshall, Turner Falls, MA); 337,720 (March 1886), "Digester or Converter;" 337,721 (March 1886) "Digester or Converter."

<sup>26</sup> See Dard Hunter, *Papermaking: The History and Technique of an Ancient Craft* (1947): 392.

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One thing that contributed to the arduousness of young Little's apprenticeship was that the two main functionaries at the company, a Swedish chemist and a German engineer, couldn't get along. After one particularly bristling argument, they both quit. Little, only six weeks on the job, found himself running the plant.<sup>27</sup>

After the Richmond experience, Griffin and Little wrote *The Chemistry of Papermaking* in 1893 (published 1894, after Griffin's death), over 100 pages of which are devoted to a description of the sulfite process and, specifically, a discussion of the substantial technical difficulties encountered in the preparation of the digesting liquor and the construction of the digesters themselves. As such, it offers a rare insight into the two years of highly innovative, but commercially unsuccessful, pulp and paper production at the Richmond plant.

The *Providence Journal* of September 3, 1887 announced the "heavy failure" of the Richmond Paper Company. Despite a recent increase in capitalization and considerable success in the manufacture of commercial quantities of high-quality paper, heavy debt and a decline in the paper market forced the closure. Within a few years<sup>28</sup> sulfite pulping soon established itself as the dominant papermaking technology in North America, a status it held until the mid-20<sup>th</sup> century when environmental laws made the by-products of this acid-based process an economic liability.

Representatives of RI Hospital Trust Bank acquired the plant at public auction in November 1889 and the plant lay vacant until it was purchased by Eugene F. Phillips of the American Electrical Works in January of 1893.

**The American Electrical Works and Phillipsdale**

Eugene F. Phillips was born in Providence in 1843. In 1862 he enlisted in the Tenth RI Volunteer Infantry Regiment and served for the duration of the Civil War. On his return to Providence he began working as a cashier with the Grocer's and Producer's Bank, a position he held into the mid-1870s. Around 1870 he

<sup>27</sup> See E.J. Kahn, *The Problem Solvers* (1956), p. 25. It is highly unlikely that a 23-year-old would have found himself running the entire Richmond plant, especially in light of the fact that Charles Wheelwright and a number of highly-trained paper professionals worked there for the duration.

<sup>28</sup> A late 19<sup>th</sup>-century, undated newspaper clipping from the collection of East Providence resident Clint Sellew tells of a fire at the Wisconsin Sulphite Fiber Company in which a "Wheelwright digester, not yet unloaded" was destroyed. The plant was run by Sellew's grandfather, Samuel Waldron, who set the plant up after the failure of Richmond Paper Company. Sellew's grandmother also worked at Richmond and he has memories of her telling stories in his childhood of having to evacuate the paper plant because of noxious fumes.

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began small-scale manufacture of insulated “office and telegraph wire” in a barn behind his Chestnut Street residence. Around this time Phillips was also treasurer of the Atlantic Tubing Company, a Providence manufacturer of flexible gas tubing.

The February 1891 *Board of Trade Journal* devoted a special section to the burgeoning business opportunities associated with electricity. An item on Phillips described his entry into the field:

At this time [1870] the practical possibilities of electricity were attracting the attention of the world, and electricians were busy with inventions to control and utilize machinery adapted to the covering of electrical wires... Mr. Phillips had been successful in gas tubing, and was asked to undertake the covering of wire for electrical use.<sup>29</sup>

Phillips secured a braiding machine, which he set up in a barn at the rear of his Chestnut Street residence. He soon hired an assistant and quickly outgrew this space. Within a few years he had moved to a larger manufacturing room on Dyer Street, and, by the late 1870s to a building owned by the Rhode Island Braiding Company, the likely source of the machinery he adapted for braiding wire insulation.<sup>30</sup>

Although corporate histories written in the late 19<sup>th</sup>- and early 20<sup>th</sup> centuries attribute the innovation and success of the American Electrical Works solely to Phillips, a study of U.S. patents sheds some light on the relationship between Phillips and Thomas L. Reed,<sup>31</sup> superintendent of Atlantic Tubing in Providence.

Reed had received his first patent in 1859 for a stove polish mixer and scraper. By the late 1860s he held several more patents related to the manufacture of flexible gas tubing and hose. It is likely that Atlantic Tubing was formed to exploit these patents.<sup>32</sup> A patent granted in 1870 for “flexible tubing or hose” (103,369) was followed by one in 1872 for “waterproof hose” (124,914) and, in 1873, a patent for “Improvements in insulating and finishing compounds for conducting wires” (144,794) was granted jointly to Reed and Eugene Phillips. The application date of late 1872 for this joint patent indicates that Reed and Phillips were working and experimenting together in the very early period of Phillips’ company.

<sup>29</sup> *Board of Trade Journal* 2 (February 1891): 54.

<sup>30</sup> See *Board of Trade Journal* 2 (February 1891): 53 for a description and illustrations of specially-designed braiding machinery with attached wire reels.

<sup>31</sup> According to the 1869 City Directory, Reed was Superintendent of Atlantic Tubing Co. By 1874 his profession was listed simply as “telegraph wire.”

<sup>32</sup> Although Phillips’ connection to Reed is unknown, a possible link is suggested in an 1873 City Directory listing of one Edwin H. Phillips as treasurer of Atlantic Tubing.

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The specifications of this patent offer insight into early methods of wire insulation as well as the links between this new technology and the well-established Providence-area technologies of wire making, textile braiding, and narrow fabric manufacture.

Reed and Phillips had refined an insulating compound to treat yarn or twine prepared for braiding. This compound consisted of Canada balsam (a resinous gum), paraffin, beeswax, and, if desired, a coloring agent for identification of different wires in a circuit or cable. From the patent specifications:

In the way of description we will assume that a piece of ordinary wire has already been covered with a braided fabric in the usual manner, with one or more layers, each or all of which have been properly charged with any of the well-known insulating compounds or solutions, which has been properly dried, and is ready for our finishing process...

A braiding machine of ordinary construction is provided with yarn or twine which has been previously charged with the hot compound hereinafter described, and the braiding process is completed as heretofore conducted.<sup>33</sup>

By combining with the paraffine, the resinous gum and wax, the compound is rendered much tougher and harder than either the paraffine or wax would otherwise be, and it remains unchanged at a higher degree of temperature than either the paraffine or wax could resist if the heat were applied thereto separately.<sup>34</sup>

This shared patent was the only one attributed to Phillips. In 1874 he secured half interest in three other Reed patents related to insulation techniques.<sup>35</sup> By 1875 Phillips had left his job as bank cashier and was listed in the city directory solely as a “manufacturer of patent flexible gas tubing and insulated telegraph wire.”

Practical applications of electricity in American industry, transportation, and communication expanded dramatically during this period. Telegraphy, telephony, electric lighting, power transmission, the beginnings of electric traction—all contributed to an expanding market for insulated wire in the 1880s and 1890s.

In 1880 Phillips acquired an industrial building in Providence at Stewart and Conduit Streets. Two years later he incorporated his company as the American Electrical Works and, within a decade, had expanded the

<sup>33</sup> Specification for U.S. patent 144,794.

<sup>34</sup> *ibid*

<sup>35</sup> See U.S. patents: “Electric Cordage” (151,157), “Insulating Telegraph Wire” (154,617), and “Insulating Electric Conductor” (156,175).

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operation to occupy a full city block. An article published in 1892, the final year of Phillips' Providence operation, gives some idea of the extent of his product line and the capacity of the wire making plant. AEW manufactured

railway feeder and trolley wire, electric light wire, incandescent and flexible cords, Americanite, magnet, office and annunciator wires, Faraday cables<sup>36</sup>, Etc., and flexible gas tubing.

The main factory fronts on Stewart Street, Warner's Lane, Summer and Conduit Streets, covering an area of 60,000 square feet, while a branch factory, with an area of 19,000 square feet, is operated on Westfield Street. 600 hands are employed in the business in Providence; and a branch factory operated at Montreal, supplies the provincial trade...

At its beginning, it depended chiefly upon the telegraph for the consumption of its production; later, the district telegraph and the telephone made new and larger demands; while, with the advent of electric lighting and motive power, department after department has been added to their works, which are to-day probably the most thoroughly equipped establishments of this kind in the world.<sup>37</sup>

Phillips's acquisition of the former Richmond Paper plant allowed him the space he needed to expand his plant and provided access to rail, coal, process water, and a wharf on the Seekonk River. The new plant contained about 175,000 sq. ft. of floor space. By 1900 he had demolished some of the Richmond plant for the erection of a rolling and drawing mill and, employing upwards of 1000 workers, was processing fifty tons per day of Michigan copper billet into rod for wire manufacture.

By the turn of the century, Phillips had built 15–20 units of worker housing in the village that was renamed Phillipsdale in his honor.<sup>38</sup> This village, served by trolley from Providence, grew significantly in the early years of the 20<sup>th</sup> century. Phillips invested with Charles Washburn in 1899 to form the Washburn Wire Company, an open hearth steel mill and wire plant to the south of AEW. In the same year, the Sayles textile interests built the Sayles Bleachery on land to the immediate north of AEW in the old location of George Wilson's Riverside operation.

<sup>36</sup> Faraday cables were a special product of AEW in which up to 100 pairs of insulated wires were inserted in lead pipe covered with a woven jacket. This wire was reputed to have the highest insulation qualities as well as the lowest inductive capacity of any wire on the market. Source: "American Electrical Works," *Board of Trade Journal* 2 (February 1891): 54.

<sup>37</sup> *Industries and Wealth of the Principal Points in Rhode Island* (1892), p. 194–195. New York: A. F. Parsons Publishing Co., 1892.

<sup>38</sup> See "Phillipsdale: Rhode Island's Magic Village." *Providence Journal* (15 Sept. 1907): S4, P.5.

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Eugene Phillips died in 1905 and management of the company passed to his sons. The earliest surviving building built by AEW is the Shipping Building (No. 22), which was served until 1928 by a rail siding along its south elevation. No significant expansion occurred until the erection in the mid-1920s of Buildings 67, 68, 69, 75, and 76. In the late 1920s, AEW demolished a significant portion of the Richmond plant for construction of a new wire mill, Building 70.

**Recent History**

In 1934 the Phillips interests sold the AEW plant to Kennecott Wire and Cable. Originally a mining concern, Kennecott purchased AEW when the company was attempting to diversify its product lines and expand its markets. Kennecott produced wire and cable here through World War II and into the 1950s. In 1958, Kennecott attempted vertical integration in its wire and cable production—it purchased the Okonite Company, a near-century-old manufacturer of wire. Okonite operated the East Providence plant, one of its several locations. In 1966, Kennecott sold the Okonite Company (in an attempt to avoid anti-trust problems), and in 1987 Okonite moved its Rhode Island operations to Ashton to a modern facility, ending a century of wire-making at this site. The plant was sold to Philip O'Brien who renamed the complex Phillipsdale Landing, leasing space to a variety of commercial and industrial tenants. O'Brien sold the plant to Essex River Ventures (Boston) in late 2005. The plant is now under consideration for rehabilitation that will combine residential and commercial mixed use.

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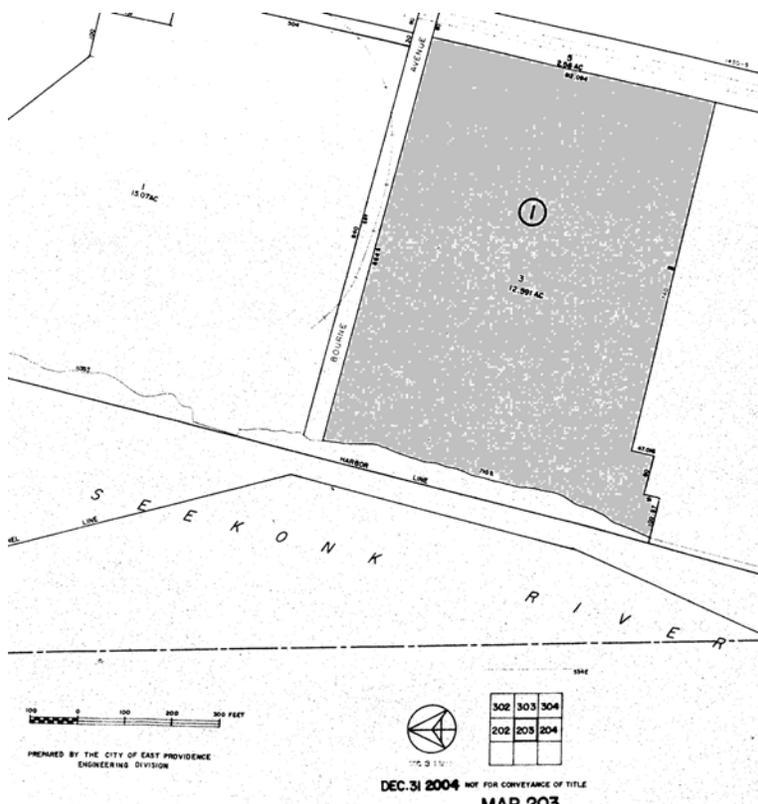
**GEOGRAPHICAL DATA**

**Boundary Description**

The boundaries of the Richmond Paper Company/American Electrical Works Complex are contiguous with East Providence Tax Assessor's Plat Map 203, Lot 3.

**Boundary Justification**

These boundaries, comprising about 13 acres, define land historically associated with the Richmond Paper Company, American Electrical Works, and Kennecott Wire and Cable during a century of industrial occupancy.



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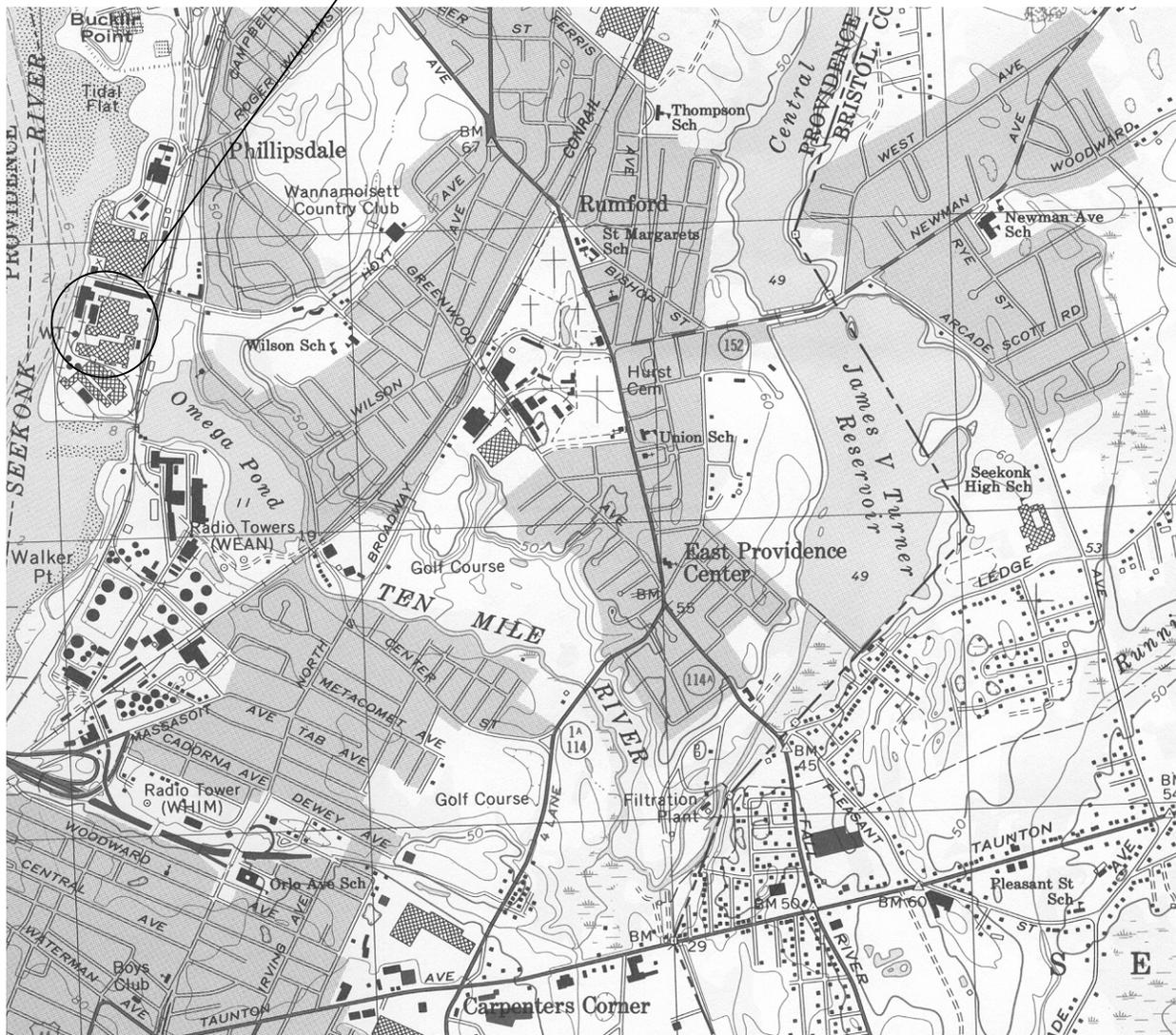
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Phillipsdale Landing  
310 Bourne Avenue  
East Providence, R.I.--Mass Quadrangle  
Scale: 1: 24,000



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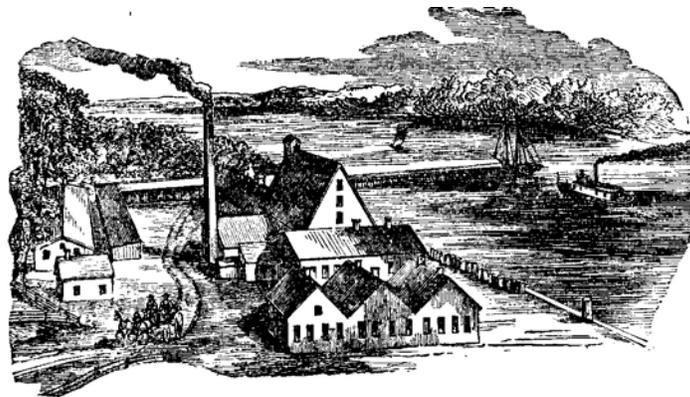
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ADDITIONAL DOCUMENTATION



RIVERSIDE.

Figure 1

Engraving of Eugene Wilson's Riverside Chemical Works (1874)  
View southwest to Seekonk River

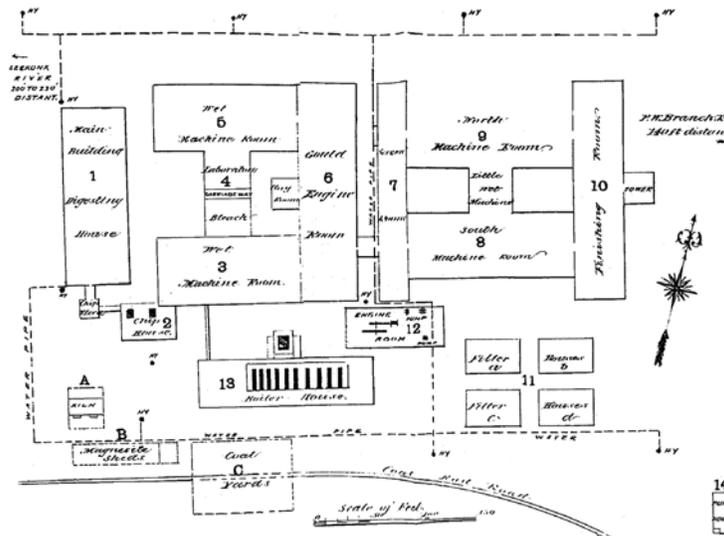


Figure 2

Intended layout of Richmond Paper Company from Barlow's Insurance Survey (1884)

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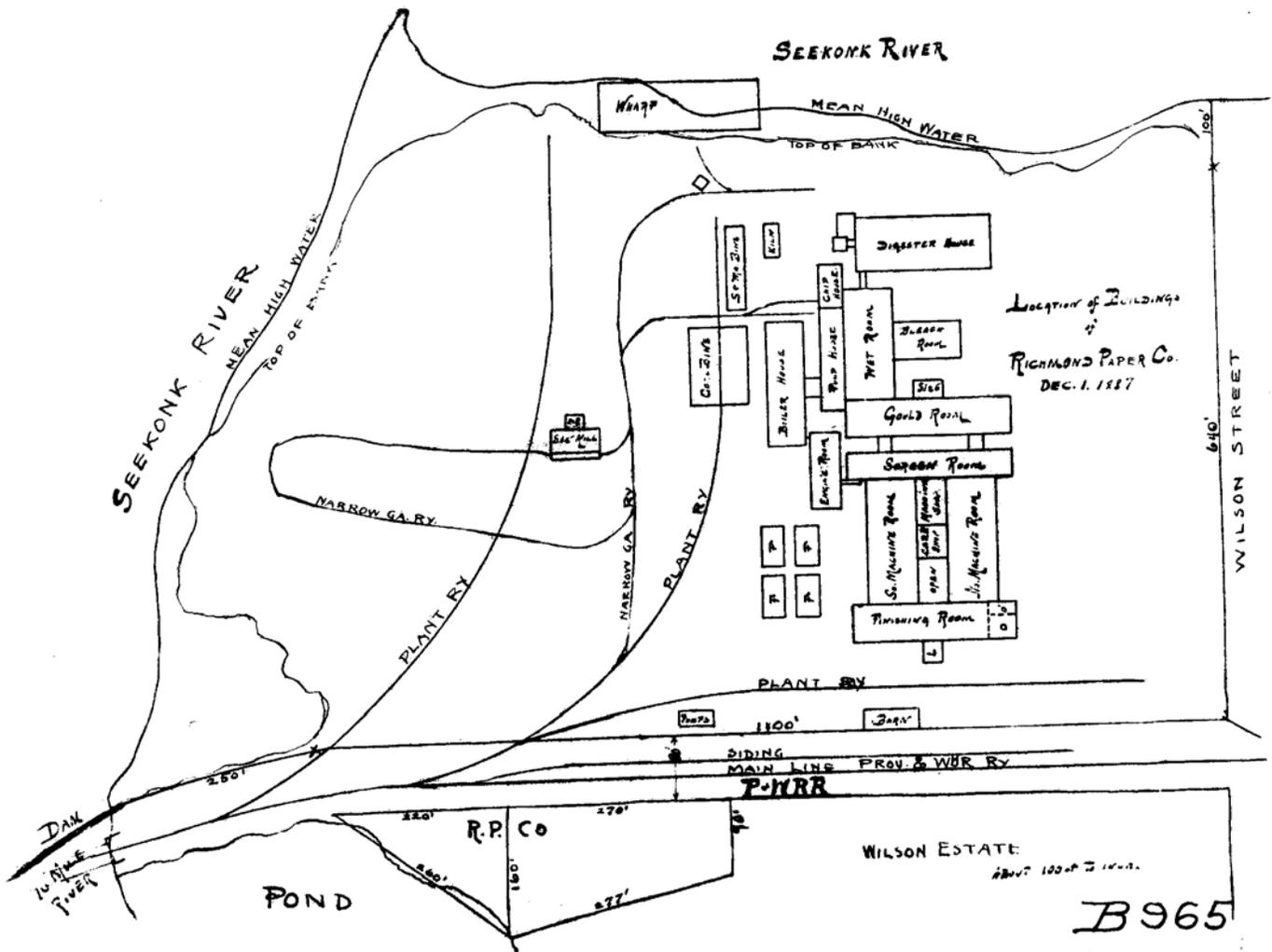


Figure 3  
Location of Buildings of Richmond Paper Company (1887)

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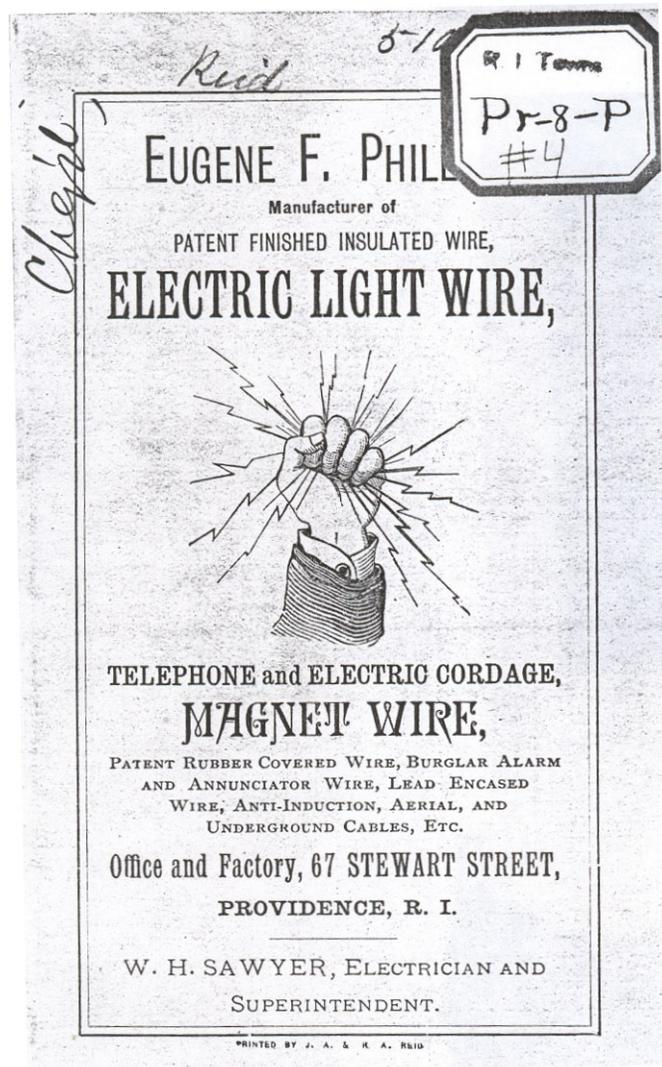


Figure 4  
Ca 1880 cover of Eugene F. Phillips catalog

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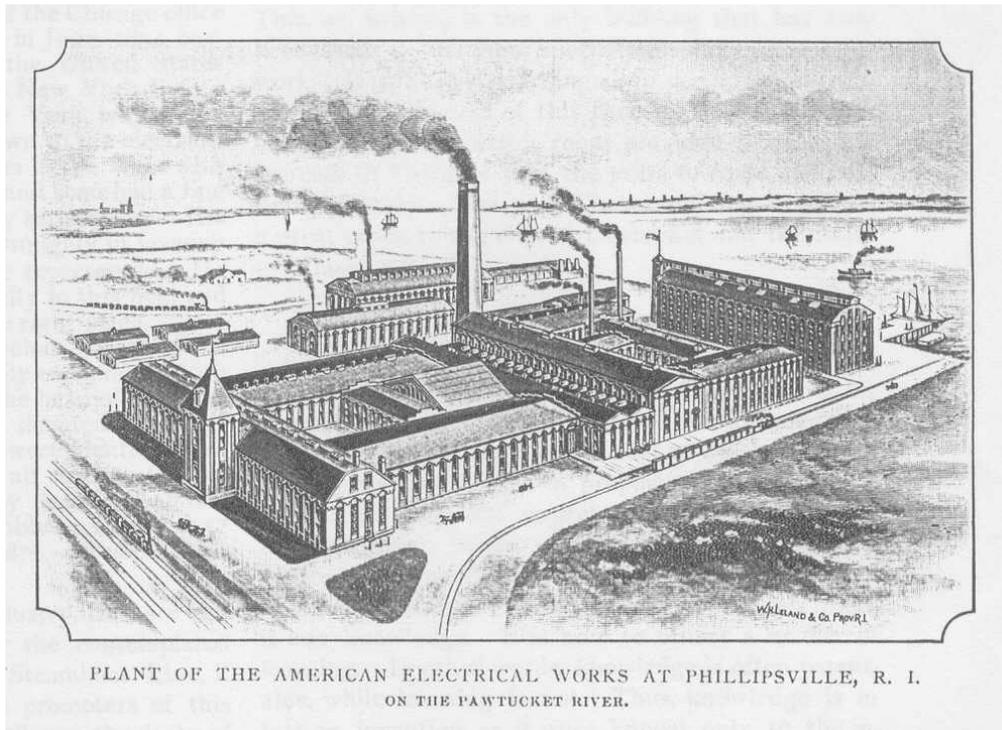
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**Figure 5**  
1895 engraving showing former Richmond plant before AEW adaptation

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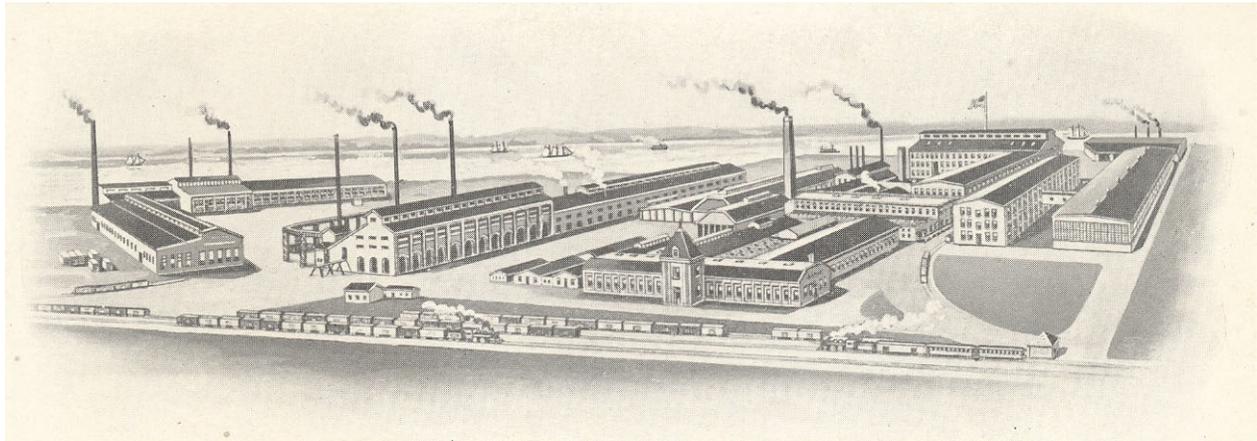
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**Figure 6**

Engraving of American Electrical Works and Washburn Wire Company (1925)

Note ca 1900 rolling mill in location of former Richmond South Wet Machine Room. The North Wet Machine Room is still standing in this image. The open hearth furnace and related Washburn Wire buildings to the left of the image are now demolished.

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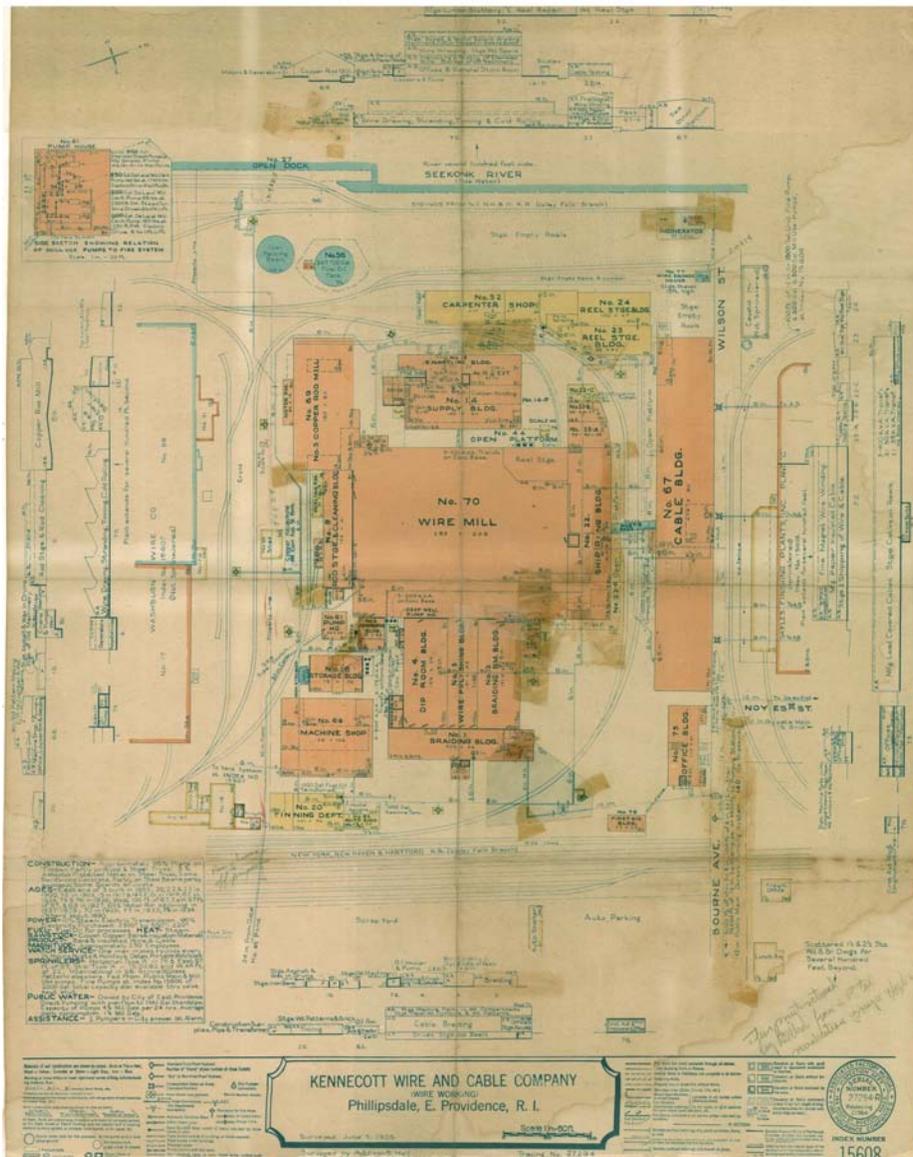


Figure 7  
Kennecott Wire and Cable Co. (1934, revised 1943)





  
Network Delivery  
A World of Service

  
Network Delivery  
8



THE FACILITY

ECONOMY MOWERS

ECONOMY MOWERS

ECONOMY MOWERS

THE FACILITY

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CAPCO

SPEED LIMIT 15

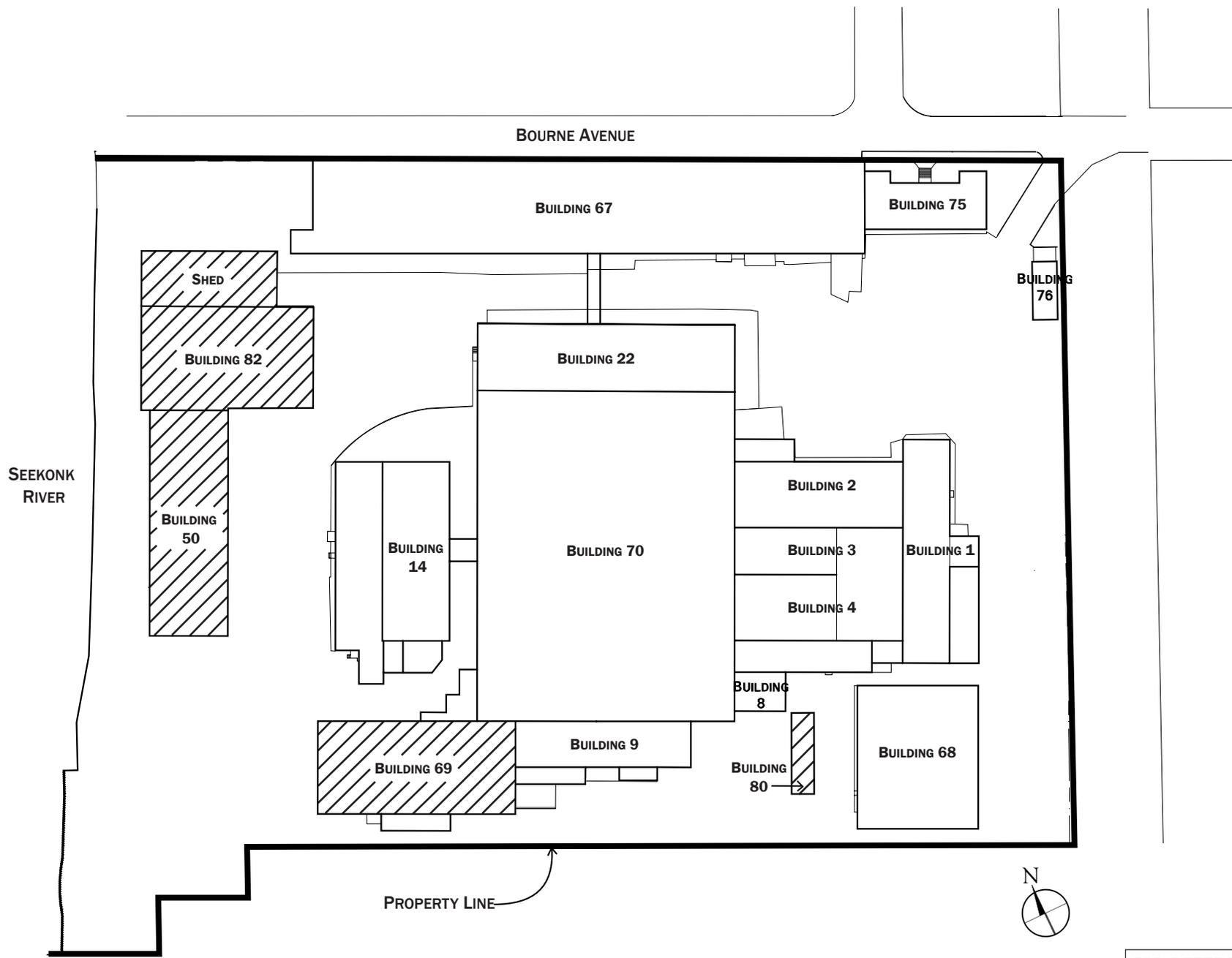
CONSTRUCTION











FOR REFERENCE ONLY

Legend:  Non-Contributing Buildings

# Richmond Paper Co./ American Electrical Works

Site Plan

Scale: 1" = 123'-0"