

NPS Form 10-900
(Rev. 10-90)



OMB No. 1024-0018

**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 Ajax Metal Company Plant

other names/site number Ajax Electric Company

2. Location

street & number 46 Richmond Street not for publication n/a
city or town Philadelphia vicinity n/a
state Pennsylvania code PA county Philadelphia code 101
zip code 19123

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this X 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 X meets does not meet the National Register Criteria. I recommend that this property be considered significant nationally statewide X locally.
(See continuation sheet for additional comments.)

Robert J. Haden 6/12/2014
Signature of certifying official Date
Pennsylvania Historical & Museum 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 commenting or other official Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this 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
 removed from National Register
 other (explain): _____

Patrick Andrews 7/30/2014
Signature of Keeper Date of Action

Ajax Metal Company Building
name of property

Philadelphia, PA
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)

- building(s)
- district
- site
- structure
- object

Number of Resources within Property

(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
1	0	buildings
		sites
		structures
		objects
1	0	Total

Name of related multiple property listing (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/PROCESSING/EXTRACTION/
manufacturing facility

Current Functions

(Enter categories from instructions)

VACANT

7. Description

Architectural Classification

(Enter categories from instructions)

ITALIANATE

COMMERCIAL

ART DECO

Materials

(Enter categories from instructions)

foundation STONE/granite

roof SYNTHETICS

walls BRICK

other

Narrative Description

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

See attached.

Ajax Metal Company Building
name of property

Philadelphia, PA
county and state

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.)

- A** owned by a religious institution or used for religious purposes.
- B** removed from its original location.
- C** a birthplace or a grave.
- D** a cemetery.
- E** a reconstructed building, object, or structure.
- F** a commemorative property.
- G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance

(Enter categories from instructions)

INDUSTRY

Period of Significance

1907-1950

Significance Dates

1907, 1908, 1910, 1931, 1944

Significant Person

(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

N/A

Architect/Builder

M. Ward Easby, Inc.

Narrative Statement of Significance

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

See attached.

9. Major Bibliographical References

Bibliography

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

Department of Labor and Industry, Pennsylvania, *Industrial Directory of Pennsylvania*, (Harrisburg, PA). Various years.

Previous documentation of file (NPS)

- preliminary determination of individual listing (36 CFR 67) has been requested.
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____

Primary Location of Additional Data

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

Name of repository: _____

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 1 Ajax Metal Company Plant, Philadelphia County, PA

The Ajax Metal Company Plant, built in phases from 1899 through 1944, stands on an odd-shaped lot at 46 Richmond Street. The complex, part of the Lower Kensington neighborhood of Philadelphia, fronts on Richmond Street to the north, Frankford Avenue to the east, Canal Street to the south, E. Allen Street to the southwest and a curved, elevated portion of Interstate 95 to the west and north. North Delaware Avenue, a six-lane thoroughfare, converges with Frankford Avenue just south of the Ajax Metal Company Plant and extends northeast to follow the Delaware River. For nearly six decades, the company specialized in the smelting and refining of brass and bronze (non-ferrous alloys) in this location. The complex possesses integrity, as it retains the character-defining features typical of a foundry and manufacturing facility and is able to clearly convey its former use. The entire complex is constructed in a variety of orange iron-spotted brick.

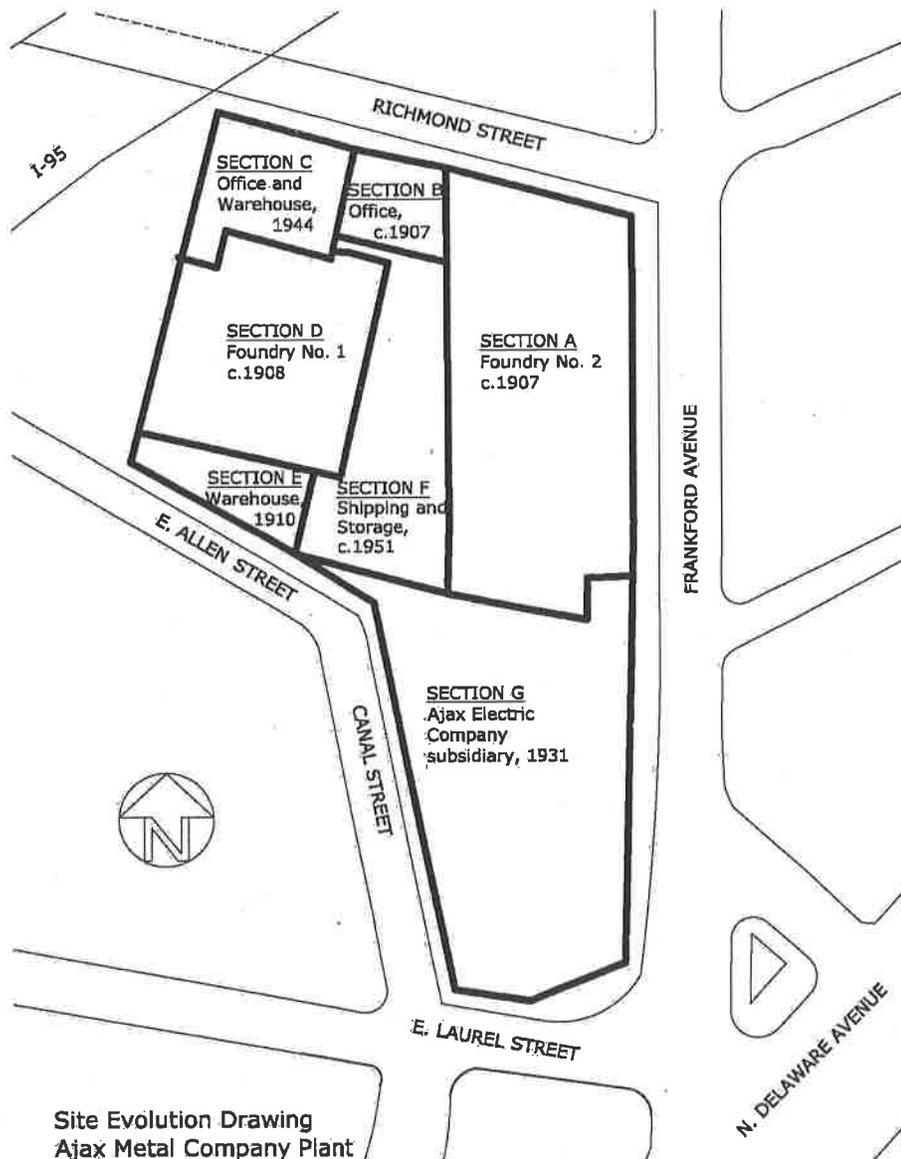
The complex stands roughly two blocks west of the Delaware River in a predominantly industrial setting amidst a mix of scattered low-rise factory buildings to the east and south of the Ajax Metal Company Plant and residential buildings to the east. Large and small open lots are located near the building: a small paved parking lot immediately to the west, a vacant lot directly north on the north side of Richmond Street, and a paved parking lot across Canal Street to the southwest and large open lots to the southeast along the Delaware River. A remnant of original worker housing, consisting of a narrow two- and three-story brick row houses dating from the late nineteenth century, occupy a small neighborhood across the street from the Ajax Metal Company Plant along the east side of Frankford Avenue, Sarah Street, Melvale Street, south side of Richmond Street and along a leg of E. Allen Street extending northeast from Frankford Avenue. Several new high-rise condo buildings stand a few blocks directly south along the river front.

The complex consists of seven joined brick sections with a reversed P-shaped footprint: **Section A** (Foundry No. 2), a two-story foundry constructed in 1907; **Section B**, a two-story warehouse with an office on the second floor constructed in 1907; **Section C**, a two-story brick warehouse with an office on the second floor constructed in 1944; **Section D** (Foundry No. 1), a multi-story, triple-monitored building that dates to c.1908; **Section E**, a four-story wedge-shaped section constructed in 1910; **Section F**, one-story warehouse dating to c.1951; and **Section G**, a two-story section constructed in 1931 for electric furnace production. The oldest sections, Sections A, B, D and E, form an irregular square-shaped ring around the newest section, Section F, the former courtyard.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 2 Ajax Metal Company Plant, Philadelphia County, PA



Site Evolution Drawing
Ajax Metal Company Plant
46 Richmond Street
Philadelphia County, PA
n.t.s.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 3 Ajax Metal Company Plant, Philadelphia County, PA

The roofs throughout are relatively flat and covered with built-up synthetic materials and contain several glass and steel monitors and skylights in several areas: Section A has a triple-tiered, stepped steel monitor with gable roofs on the top two tiers and a long shed roof monitor along its eastern edge; Section B had a slightly gabled roof profile that is not visible at street level; Section C has four small gabled skylights; Section D has two long gabled monitors; Section F has a long gabled monitor roof running north to south and a small gabled monitor aligning east to west at the south end; Section G has two sets of paired sawtooth roofs arranged butterfly-style, back-to-back along the length of this section. Section E contains two small penthouses corresponding to a stair and elevator tower.

North elevation (Richmond Street)

At the northeast corner of the plant is Section A, built in 1907. Section A is ten bays wide and has a monumental scale typical of foundry structures. Section A has two round-arched entry openings extending the height of this section. The entrances are presently boarded, but originally contained double-leaf doors and rounded transoms. Base blocks of light gray granite serve as bumpers at the entrance openings. Glass block panels dating to the 1970s now pierce these transoms. The pattern of the fenestration consists of paired segmental arched windows flanking the entrance openings, with two groups of paired window openings between the two entrances. A low parapet wall adorns Section A. The decorative brickwork for the façade of the foundry consists of a series of raised pilasters flanking the paired windows and low-relief corbelled spandrels above the windows. Section A has a dark iron-spotted brown brick water table on the north elevation.

In the center of the north elevation is Section B, constructed as an office/warehouse in c.1907. Two-stories in height, this section is three bays wide and has a gray granite base. The center bay is occupied by a square service entrance opening with a boarded transom. This entrance has been covered with a metal security panel. Two single-leaf door openings are located at the outer bays of Section B and both are filled with flush steel doors. The entrance at the westernmost bay has a Classical Revival style painted terra cotta hood supported by terra cotta brackets. The second opening at the easternmost bay of Section C is devoid of any decoration above the doorway. The two square window openings flanking the main service entrance on the first story are boarded. On the second story, the windows consist of two groups of tripartite 1/1 double-hung wood windows with single-light transoms on either side of the central group of four 1/1 double-hung wood windows with single-light wood transoms. The roofline is crowned by an elaborate Classical Revival style stepped parapet of white glazed terra cotta. The words "THE AJAX METAL CO" appear in the center of the cornice in a shallow pediment adorned with paired brackets. Egg-and-dart molded terra cotta stretches across the front of Section B. The brickwork in the office section continues the pilaster theme from the foundry section, but the pilasters rise to a two-story height instead of a single-story.

Section C at the westernmost portion of the north elevation dates to 1944 and is four bays wide and two stories in height. Section C is utilitarian in style and typical of commercial buildings of

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 4 Ajax Metal Company Plant, Philadelphia County, PA

this period. The pilasters of Section C are raised brick with concrete stylized Art Deco style capitals. The base of the section is brown iron-spotted brick. The first story contains three boarded window openings. The second bay from the west side of the building contains a boarded square-shaped service door and a single-leaf man door, also boarded. The second story features groups of four double-hung wood windows with single-light wood transoms.

West elevation

The west elevation, adjacent to a fenced-in parking area, is utilitarian in character. The northern half of the building, consisting of Section C, is devoid of any ornamentation and consists of a brick wall and a simple shaped stepped parapet. There is one single-leaf entrance opening containing a steel door. The majority of the southern half of the elevation corresponds to Section D. The first story of Section D is brick; the second story is constructed of corrugated metal, some of which is still visible. A garage opening with a roll-up metal door is located in the middle of Section D. The original steel frame monitors of Section D are set back, but visible from the west elevation. One of the original crucible smokestacks remains intact on Section D. The two southernmost bays on the west elevation are part of Section E. Section E contains two arched windows on each of the second through fourth floors.

Southwest elevation (E. Allen Street and Canal Street)

The south elevation of the complex consists of two sections: the E. Allen Street elevation and the Canal Street elevation.

The E. Allen Street elevation itself consists of two portions: Section E, dating to 1910 and Section G, added in 1931. Section E is six bays wide with a slight bend in the wall at the fourth bay from the west on the upper three stories, corresponding to the pre-1931 angle of E. Allen Street. The first and second stories of Section E are boarded; the third and fourth stories contain multi-light industrial steel windows. A modest metal cornice crowns the top of Section E on this elevation.

The remainder of the E. Allen Street elevation facing southwest consists of a one-story portion of Section G that is seven bays wide. The bays are separated by brick pilasters with geometric Art Deco style capitals. All of the window openings along this portion have been infilled with concrete block. There are three door openings in this part of Section G: two single-leaf openings with roll-down security doors at the outer ends and a garage opening near the middle with a metal roll-up door.

The southwest elevation along Canal Street corresponds to Section G and is twelve bays wide and two stories high. All of the window bays on the first floor have been boarded with concrete block. The water table of this elevation consists of brown iron-spotted brick. The second story contains several original multi-light industrial steel windows. A few replacement vinyl windows have been inserted at the south end of the second story; four windows on the north end of the second story have been boarded with concrete block that have glass block inserts. This elevation is adorned by a series of raised brick pilasters with stylized geometric Art Deco capitals.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 5 Ajax Metal Company Plant, Philadelphia County, PA

South elevation (E. Laurel Street elevation)

The south elevation, corresponding to Section G, is comprised of two angled elevations. The western portion has two bays and the eastern has three bays. The first story contains four garage style service doors filled with roll-up steel doors. A single-leaf entrance opening with a raised concrete surround is located at the easternmost end of this elevation. Throughout the second story, the window openings are filled with the original multi-light industrial steel windows. Like the west elevation, the pilasters are raised brick with Art Deco style geometric capitals.

East (Frankford Avenue) elevation

The east elevation consists of two sections and has a total of twenty-four bays: Section D at the north end (built in c.1907), and Section G at the south end (constructed in 1931). The northern half is one story in height, fourteen bays wide and contains three service garage doors located at the ends and the middle. There is one single-leaf entrance at the southern end of Foundry No. 2. The rest of the elevation is filled with paired segmentally arched windows which are all boarded. The same raised brick pilasters are visible on this elevation as on the north elevation.

The southern half of the elevation is two stories in height and contains the original multi-light industrial metal sash windows on the last five bays of the second story; the window openings on the northern half of the second story are boarded or have been replaced with smaller industrial sash sometime in the late twentieth century. All of the windows on the first floor have been boarded but contain newer small glass blocks windows. The pilasters dividing every bay of Section G are two stories in height and are crowned with Art Deco style capitals.

Interior

The seven sections of the Ajax Metal Company Plant, Sections A – G, are interconnected, with the former courtyard, Section F, in the center of the building. Brick firewalls separate the individual sections of the complex. The interior of the Ajax Metal Company Plant is utilitarian in character and retains many of the original finishes, such as steel truss framing, exposed concrete and steel columns, glass skylights and exposed brick walls. The ceiling materials vary depending on the period of construction of the area.

The interior of Section A, dating to c.1908, is divided into two areas: a four-story main foundry space and a one-story area along the east end which originally housed crucibles for melting brass. The main foundry space is a large open space that has walls that are two-stories in height and has a stepped roof structure which extends another two stories up to a total of four stories in height. A series of steel frame trusses are intact and exposed throughout the main foundry space of Section A. The original wood frame roof sheathing is also visible from the interior of Section A. The original 9-light awning style wood windows are intact at the second floor level behind the exterior corrugated metal and are also visible along the vertical sides of the monitor roofs. At the north end of the space there is a single exposed round steel column. Along the south end of Section A there is an exposed steel elevator shaft which corresponds to the four levels of Section E. Square concrete columns support the brick wall behind the elevator shaft. Modern fluorescent strip lights hang from the ceiling. The east wall of the main foundry space retains a series of

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 6 Ajax Metal Company Plant, Philadelphia County, PA

openings that were formerly used for shoveling coal into furnaces; these openings are presently filled with brick.

The interior at the east end of Section A (a one-story area) has a concrete floor, a wood shed-style ceiling with steel truss support system and three heavy brick piers that both support and separate areas of this section.

The first floor of Section B, constructed in 1944, is characterized by square concrete columns, concrete floors, exposed concrete girders and brick walls. A modern concrete staircase located at the north end of Section B leads up to the office on the second floor. The second floor of Section B consists of a large open office area with flush wood wainscoting, wood partitions, carpeted floor and wood trim around the skylights.

The first floor of Section C, constructed in c.1907, is utilitarian in character with a concrete floor, round concrete columns, concrete girder system and exposed brick walls. An enclosed stair leads directly from the street level to the second floor of Section C. The stair is enhanced with high paneled wood wainscot, plaster walls and ceilings. The second floor of Section C, constructed in 1907, is another open office area connected through a doorway to the office area of Section B. The eastern half of the office contains a large open office area with stained paneled wainscot, plaster walls, paneled wood office partitions, plaster ceilings and two large paneled skylights. The steel column in the center of this space also has paneled wainscot and plaster on the upper end. The floors are carpeted. To the east of Section C's main space are two private smaller offices with wood paneled wainscot and plaster walls.

Section D, constructed in c.1907, consists of three areas: a large open space formerly used as a foundry and two smaller spaces side by side at the south end. The walls are brick throughout. The foundry space contains exposed steel columns near the side walls supporting a series of steel trusses. The wood sheathing is visible on the ceiling, as is the corrugated metal in place of the original glass and steel. A double overhead steel girder crane in the middle of the room formerly used to move heavy objects for furnace production. The crane's side panel is labeled "BOX CRANE & HOIST CORPORATION," which was installed sometime between 1907 and 1928.¹ There are several round holes in the roof where smokestacks once penetrated the roof that have been patched with new wood. One of the largest patches is visible in the northern half of Section D; on the floor, the concrete gives way to a diamond-shaped square of brick where the furnace formerly stood. Tracks for unloading materials from carts are visible on the floor at the north end to the west of the garage door opening. The two smaller spaces at the south end of Section D, separated by a brick fire wall from the foundry space, have trapezoidal footprints. The eastern space has six round concrete columns, exposed concrete girders, stucco walls and

¹ The Box Crane & Hoist Corporation, founded by Alfred Box in 1878 in Philadelphia, merged with the Shaw Electric Crane Company in 1928 to form the Shaw-Box Crane & Hoist Company. Ashcroft company webpage, accessed on the World Wide Web on April 22, 2008, http://www.ashcroft.com/aboutus.cfm?doc_id=642.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 7 Page 7 Ajax Metal Company Plant, Philadelphia County, PA

concrete floors. The western space contains only one round concrete column and has exposed concrete girders and unpainted brick walls.

Section E, constructed in 1910, is only visible on the first floor, as the upper stories are not safely accessible from the defunct freight elevator in Section A. The first floor continues the concrete flooring typical throughout and has painted brick and concrete block infilled walls. The columns, visible from Section A, are square concrete. The ceiling is a system of exposed concrete girders.

Section F, a one-story infilled area that dates from c.1951, also has concrete floors and brick walls. The regularly-spaced columns which support the roof in this section are modern steel I-beams. The original monitor is exposed, but the glass has been covered with corrugated green plastic panels. The exposed brick wall on the east side of Section F contains a series of openings that have been patched with newer brick. The openings were formerly used for shoveling coal from this former yard into Section D, the foundry.

Section G, dating to 1931, has exposed concrete floors. The ceilings are approximately eighteen feet in height, with exposed concrete girders. The concrete columns follow a regular grid and are square with a modest stylized bracket at the top. A freight elevator encased in brick stands in the middle of Section G. There are four ramps at the south end of Section G in front of the four loading doors. Remnants of metal tracks for loading trolleys remain embedded in the floor, formerly used to assist with transporting goods to and from the loading area.

Integrity

The Ajax Metal Company Plant is an intact example of a foundry and manufacturing facility. The exterior and interior appearances have not been changed with the exception of boarding of many of the windows, although the openings remain. Some of the windows have been replaced over the years, but the newer windows do not detract from the overall appearance. Although the original courtyard was infilled in the 1950s, this addition at the back of the building does not affect the ability of the building to convey its original use as a foundry and factory. The rooflines of the individual sections, with the raised monitor roofs designed to illuminate and ventilate the interior, are completely intact, as are the concrete columns and structural steel interior trusses. Thus, the building retains considerable architectural integrity.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 1 Ajax Metal Company Plant, Philadelphia County, PA

The Ajax Metal Company Plant, standing at the southeast corner of Richmond Street and Frankford Avenue in the Kensington neighborhood of Philadelphia, is an important vestige of Philadelphia's foundry industry. The building is significant under Criterion A in the area of Industry for housing a local leader in the brass foundry industry for over four decades; the company was also an acclaimed producer of electric furnaces used to melt brass and bronze. The period of significance begins in 1907, when the oldest two sections of the Ajax Metal Company Plant were constructed, and ends in 1950 when the parent company was purchased by H. Kramer & Company, a smelting and refining corporation based in Chicago, IL. The Ajax Electric Company, a subsidiary of the Ajax Metal Company, continued to produce electric furnaces in the southern wing of the building until 1954, when this division was moved to another building in Philadelphia. During the period of significance, the Ajax Metal Company Plant was a major contributor to Philadelphia's industrial strength by providing brass and bronze ingots for local military, railroad and marine use. The Ajax Metal Company also manufactured highly-efficient electric furnaces for smelting brass that were sold and used throughout the country.

A Brief History of the Kensington Neighborhood

The Ajax Metal Company Plant stands in the working-class neighborhood of Kensington in Philadelphia. Six Swedish families had taken up settlement in this area, members of the Cox, Rambo and Nelson families of New Sweden who had been granted these lands north of the Cohocksink Creek and marshlands, in the vicinity of the Great Elm near the Lenape settlement known as "Kachamensi." In 1683, the Shackamaxon Tract was acquired by William Penn, commemorated at Pennsylvania Treaty Park at Beach Street, Delaware Avenue and E. Columbia Avenue, where the treaty was possibly signed.

The area directly to the north of the village of Shackamaxon was originally laid out as a town in the 1730's by Barbados merchant Anthony Palmer and named "Kensington" after England's Kensington Palace.¹ The rough boundaries were Frankford Avenue to the west, Delaware Avenue to the east, Norris Street to the east and East Columbia to the south. The meandering path of Cohocksink Creek formed an informal boundary between Kensington and Philadelphia. After 1820 this town became known as the Kensington District of the Northern Liberties. As the area became populated, commercial development spread along North Delaware, Germantown and Frankford Avenues, while the Cohocksink Creek acted as the southern boundary between Kensington and Philadelphia. Kensington was annexed by the City of Philadelphia as a result of the 1854 Act of Consolidation. In 1860, the southern end of the polluted Cohocksink Creek was buried and made an underground culvert; above ground it was known as Canal Street.²

A variety of manufacturing companies settled in Kensington in the nineteenth century, drawn by the open space and access to the Delaware River. The arrival of the railroads in the mid-

¹ Rich Remer, "Old Kensington," *Pennsylvania Legacies* 2, 2 (November 2002), Historical Society of Pennsylvania Website, accessed on the World Wide Web on April 22, 2008, <http://www.hsp.org/default.aspx?id=496>.

² Adam Levine, "From Creek to Sewer," Website for PhillyH2O, accessed on the World Wide Web on April 22, 2008, <http://www.phillyh2o.org/creek.htm>.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 2 Ajax Metal Company Plant, Philadelphia County, PA

nineteenth century spurred even more industrial development in Kensington and led to the success of the shipbuilding, textile, carpet, tanning and leather-working industries, including the William Cramp Shipyard (Beach Street, Norris Street and Delaware River, partially demolished), the John B. Stetson Hat Company (a complex of two dozen buildings around E. 4th and Montgomery Streets, demolished), the Schoenhut Toy Factory (at the corner of Adams and Sepviva Streets, demolished), the Bromley Carpet Mills (201-263 East Lehigh Avenue, demolished), and Henry Disston's Keystone Saw Works (located a block south of the Ajax Metal Company Plant at Front and Canal Streets, demolished).

By the mid-nineteenth century, many metalworking and metal-fabrication establishments had opened in Kensington and remained in business through the early twentieth century. Nearly all of these buildings have been demolished. The first of these shops was the Point Pleasant Iron and Bell Foundry, owned by Charles B. Parke in 1819 at 945-961 Beach Street.³ The Iron, Brass and Bell Foundry, which originally stood at Beach and Penn Streets, opened in 1826 and had 26 employees.⁴ The partnership of Hughes & Patterson operated two successful works: Philadelphia Iron and Tinplate Works and Beach and Vienna Streets, which opened in 1858 and the Delaware Rolling Mills at Richmond and Otis Streets in 1870.⁵ Beginning in 1845, the Port Richmond Iron Works, owned by I.P. Morris & Co., stood at Ball St, E. York, Richmond, and Beach Streets a block from the Delaware River.⁶ The Black Diamond File Works, a large plant owned by G. H. Barnett, stood adjacent to the Ajax Metal Company from about 1901 through the 1960s. One of Ajax's competitors, the William White Smelting Works, also opened its doors in c.1881 at 1506-1514 Wilt Street (extant) in a much smaller facility than the Ajax Metal Plant, and later expanded to another larger building at Richmond and Hedley Streets (demolished) in 1916.⁷

At the turn of the twentieth century, the neighborhood surrounding the Ajax Metal Company Plant was dominated by a mix of factories and modest row houses for the factory workers. North Delaware Avenue near where Frankford Avenue begins was populated with lumber mills, sugar refineries, and warehouses and the freight yards for the Pennsylvania Railroad. The Nicholson File Company manufactured metal files throughout the early 1900s in the block immediately north of the Ajax Metal Company Plant.

By the mid-twentieth century, many factories in this area moved or closed, leaving a plethora of empty industrial buildings. Construction of Interstate-95 through Kensington began in the late 1960s and continued through the mid-1970s, causing the demolition of many factories and

³ James Mease, M.D. and Thomas Porter, *Picture of Philadelphia, Vol. I*, (Philadelphia: Robert Desilver, 1831), 78.

⁴ Mease, 76.

⁵ American Iron and Steel Association, *Directory to the Iron and Steel Works of the United States* (Philadelphia: American Iron and Steel Association, 1894), 112.

⁶ Hexamer Fire Insurance Survey for Port Richmond Iron Works, 1894, accessed on the World Wide Web on April 25, 2008, <http://www.philageohistory.org/rdic-images/HGS/view-hgs.cfm/HGSv29.2774-2775>.

⁷ "Fishtown - William White Smelting Works," from the website for "Workshop of the World," accessed on the World Wide Web on April 16, 2008, <http://www.workshopoftheworld.com/fishtown/white.html>.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 3 Ajax Metal Company Plant, Philadelphia County, PA

dwellings in the neighborhood.⁸

Building History

The Ajax Metal Company Plant was built in stages to match the needs of the company over a forty year period. As the company grew, new sections of the plant were erected and other sections were demolished. Throughout its history, the building's address was known as 46 Richmond Street in city directories. Historic maps through the 1970s, however, continue to show a range of addresses along Richmond Street as the plant expanded eastward.

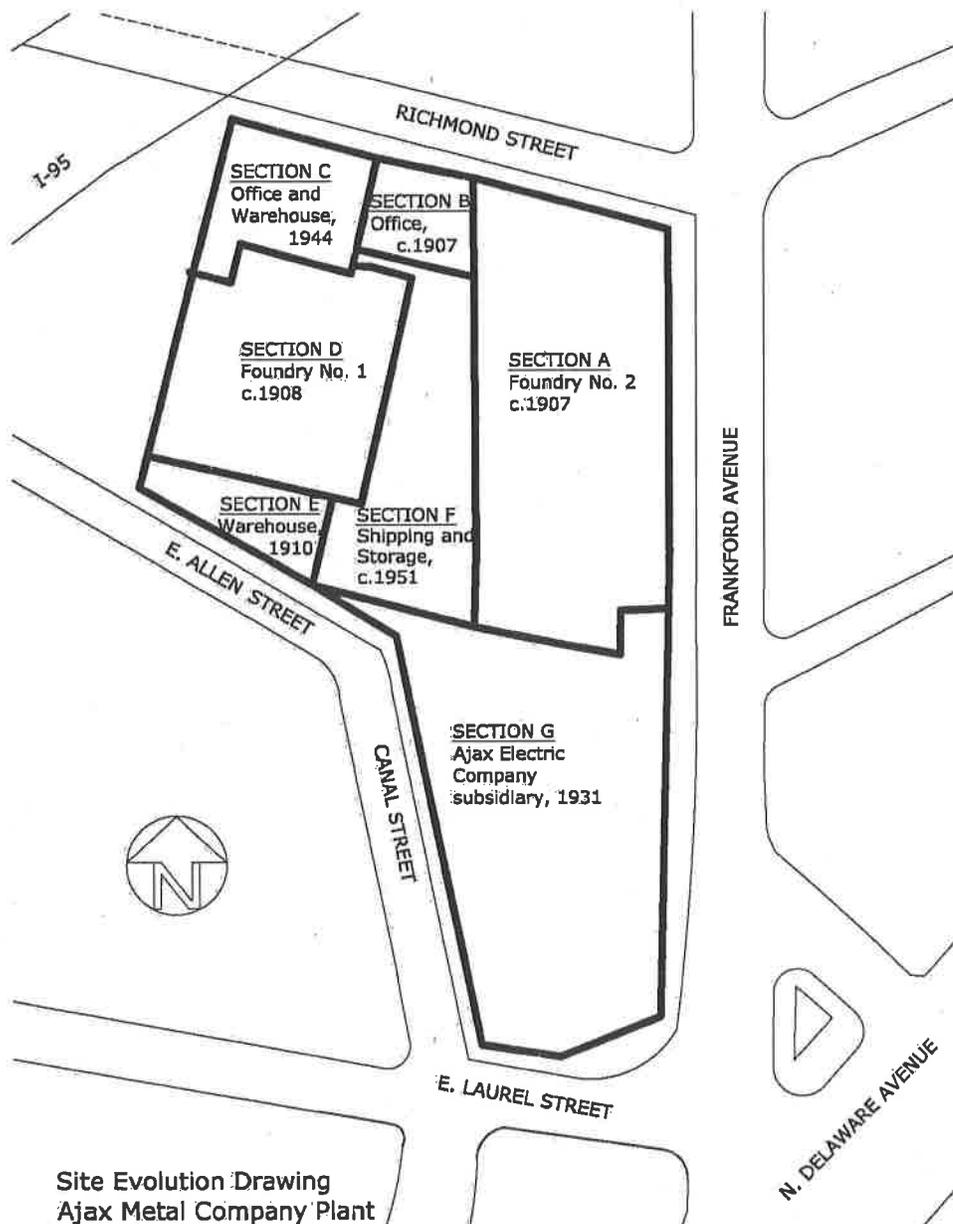
The original plant occupied what is now Section C at 46 Richmond Street and was expanded eastward and southward by the early 1900s. The oldest sections of the present building, Sections A and B, were constructed in 1907 and occupy the southwest corner of the intersection of Richmond Street and Frankford Avenue. The following year, in 1908, a second foundry, Section D, was added behind Section C and did not have any street frontage. The building assumed an inverted U shape around an irregularly shaped courtyard when Section E, a warehouse, was built in 1910 to the south of Section D along E. Allen Street. Section G was built in 1931 to the south of Section A in the location E. Allen Street as it continued towards Frankford Avenue. Section F, the newest portion of the building, was constructed in 1951 infill the courtyard.

⁸ "Vietnam Veterans Memorial Highway," accessed on the World Wide Web on April 22, 2008, <http://www.pahighways.com/interstates/195.html>.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 4 Ajax Metal Company Plant, Philadelphia County, PA



Site Evolution Drawing
Ajax Metal Company Plant
46 Richmond Street
Philadelphia County, PA
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United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 5 Ajax Metal Company Plant, Philadelphia County, PA

Beginning in 1880, the Ajax Metal Company began occupancy of a one-story brick building at 46 Richmond Street, according to city directories and fire insurance maps. The building used by Ajax Metal Company was located on the south side of Richmond Street in the middle of the block. This original foundry building dating to 1880 is no longer standing.



Hexamer Insurance Map, 1889
Ajax Metal Company plant boundaries — — — — —

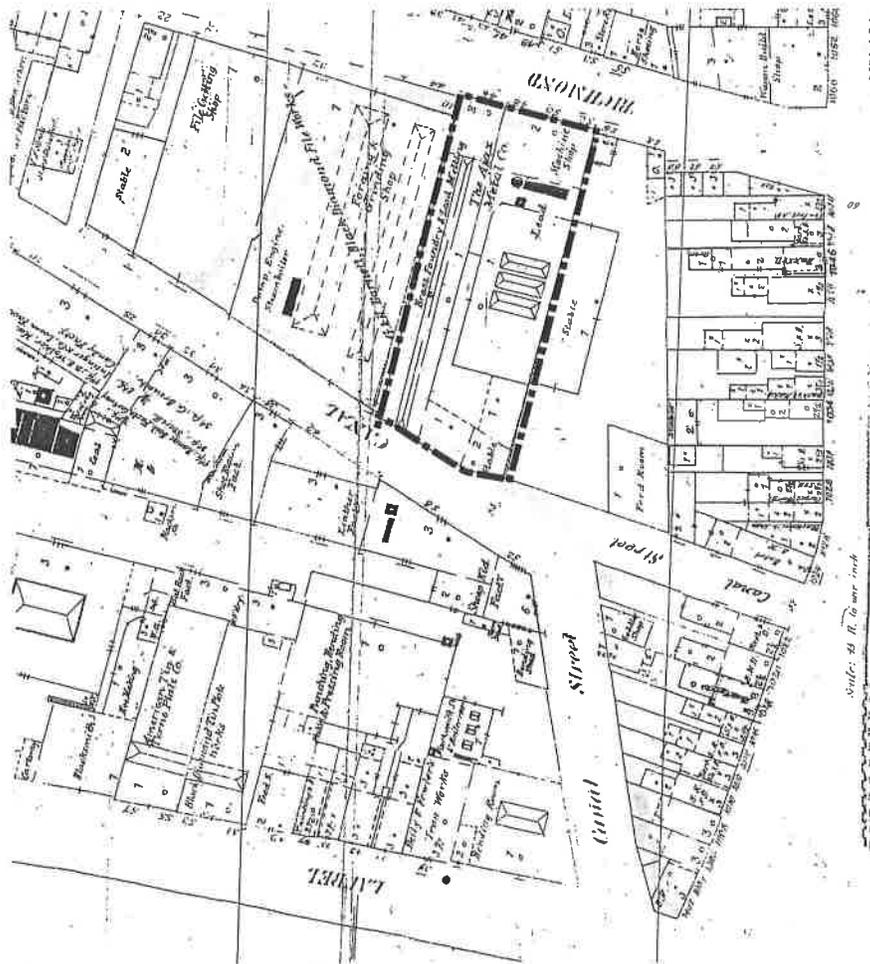
By 1901 according to the Hexamer Insurance Map, the Ajax Metal Company had expanded eastward and southward, occupying two existing one-story adjacent dye shop buildings at 48-52

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 6 Ajax Metal Company Plant, Philadelphia County, PA

Richmond Street. The Ajax Metal Company had also built by this time a one-story narrow foundry building with a monitor roof along the entire western edge of the lot for brass and lead melting, added a second story to the original foundry at 46 Richmond Street, and had constructed a new two-story machine shop at 48-52 Richmond Street. None of these buildings remain standing.



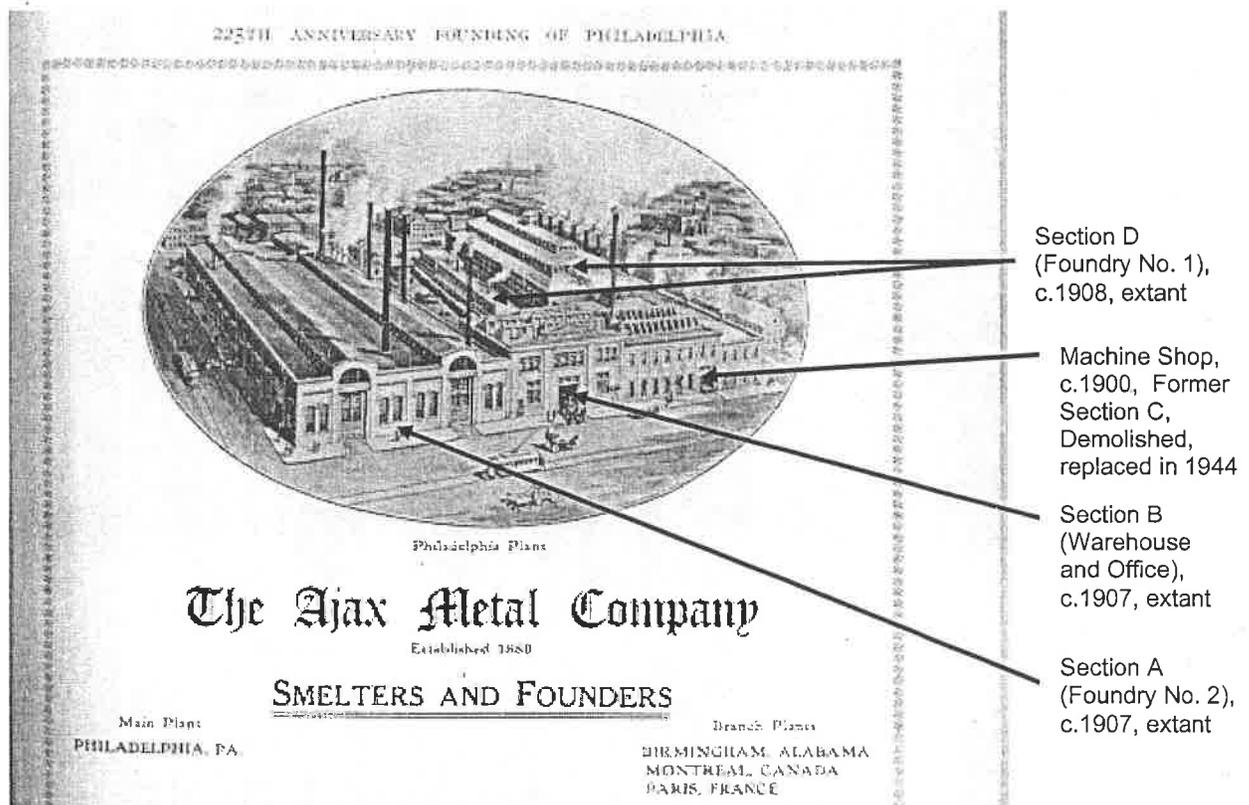
Hexamer Insurance Map, 1901
Ajax Metal Company plant boundaries — — — — —

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 8 Ajax Metal Company Plant, Philadelphia County, PA

By 1908, the owners of the Ajax Metal Company built Section A (Foundry No. 1), a four-story, tiered structure of brick, steel and glass standing behind 46 Richmond Street (extant, Section A). This structure appears in an advertisement in a commemorative program celebrating the 225th anniversary of Philadelphia (below).⁹



Advertising image for Ajax Metal Company from *Philadelphia, Its Founding and Development, 1683-1908* by William W. Matos (Philadelphia: The Executive Committee, 1908), 348.

In 1910, the Ajax Metal Company built a narrow four-story brick and concrete warehouse facing E. Allen Street attached to Foundry No.1 (extant, Section E). This warehouse contained a shipping and receiving department on the first floor, and furnace storage and laboratory rooms on the upper stories. The resulting complex had an inverted U shape structure with an irregular courtyard accessible from E. Allen Street.

⁹ Advertisement for Ajax Metal Company, William W. Matos, *Philadelphia, Its Founding and Development, 1683-1908* (Philadelphia: The Executive Committee, 1908), 348. Urban Archives, Temple University, Philadelphia, PA.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 9 Ajax Metal Company Plant, Philadelphia County, PA

In 1931, Ajax Metal Company constructed a two-story, reinforced concrete warehouse at the corner E. Laurel and Frankford Avenue (Section G) on the grounds of former E. Allen Street for the Ajax Electric Company, a subsidiary of the Ajax Metal Company. In order to maximize the addition and physically connect it to the existing plant, the company acquired the tail-end portion of E. Allen Street from the City of Philadelphia and had it condemned. M. Ward Easby, a local engineer and contractor, was selected to design and build this addition. The cost for constructing this warehouse was \$115,000.¹⁰ The new warehouse was used for the storage and shipping of non-ferrous metals.¹¹ The exterior style of the warehouse reflects the influence of the Art Deco style with its stylized geometric rounded capitals of the pilasters.



Photograph of Ajax Electric Company (primarily Section G of the plant) taken June 5, 1954, #42731-17, Looking north from the intersection of Frankford Avenue, Laurel Street and Delaware Avenue
Department of Records, Philadelphia City Archives, Philadelphia, PA

¹⁰ "Metal Company to Build Plant," *Evening Bulletin* (20 January 1931), Temple Urban Archives, Temple University.

¹¹ "Metal Company to Build Plant."

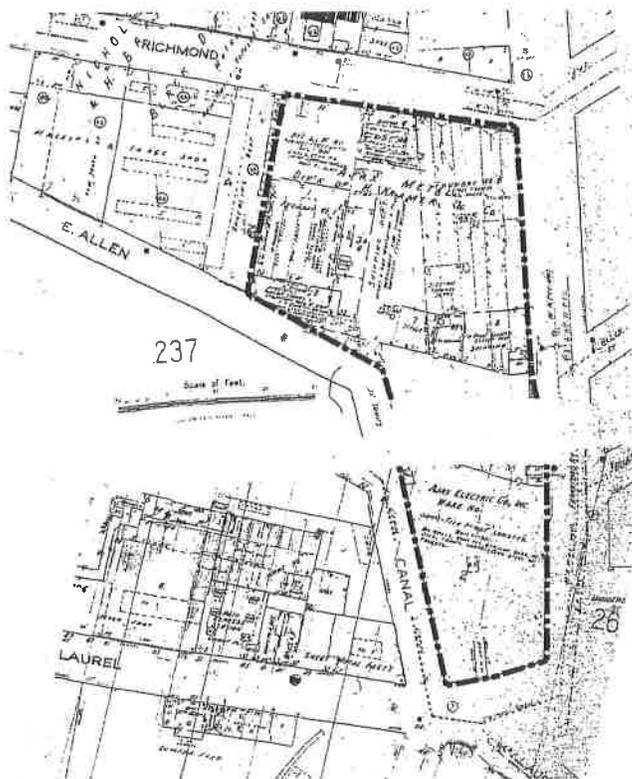
United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 10 Ajax Metal Company Plant, Philadelphia County, PA

After a three-alarm fire damaged the northwest portion of the plant facing Richmond Street on September 18, 1944, the oldest section of the plant was demolished.¹² A two-story, three-bay brick office and warehouse (now known as Section C) was erected in its place that same year.¹³

In 1950, the Ajax Metal Company was purchased by the H. Kramer & Company of Chicago, IL. The northern half of the plant (Sections A, B, C, D, E) was renamed Ajax Metal Division of the H. Kramer Company and was used for smelting bronze and brass, and contained storage, a laboratory and offices.¹⁴ In c.1951, the E. Allen Street courtyard was infilled with a one-story shipping department (Section F, still standing).



Sanborn Insurance Map, 1951
Ajax Metal Company plant boundaries

¹² "War Plant Burns in 3-Alarm Fire," *Evening Bulletin* (18 September 1944), Temple University, Urban Archives, Philadelphia, PA.

¹³ Building Permit #80210 (4 October 1944) for "tear down and clear"; Zoning permit # 25058 (19 October 1944), Department of Licensing & Inspections, City of Philadelphia.

¹⁴ Zoning Permit #111263 (17 March 1964), Department of Licensing & Inspections, City of Philadelphia.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 11 Ajax Metal Company Plant, Philadelphia County, PA

The southern half of the building, Section G, was used through the 1954 for electric furnace production for the Ajax Electric Company (a subsidiary of the Ajax Electro Metallurgical Corporation, the successor firm to the Ajax Metal Company).

The entire building was sold to Unique, Inc., a party supply company, in 1971.¹⁵ The plant was then used for assembling and warehousing picnic and party goods through 1987; after this time, it was converted into storage for telephone equipment.¹⁶ In 1993, three 40' high smokestacks in the former Foundry 2 were partially removed above the roof by the owner.¹⁷ In the early 2000s, the entire complex was used for variety storage, showroom and distribution center by Jatco, Inc., importers of general wholesale merchandise.¹⁸ The building is presently vacant.

Design of the Building

The exterior and interior design of Sections A and D, also known as Foundry No. 1 and Foundry No. 2, reflect traditional foundry design of the late nineteenth and early twentieth centuries. Although the architects and builders remain unknown, these portions of the building exhibit an understanding of industrial design and practicality. The foundry was intended as a freestanding structure with firewalls separating it from other parts of the building for protection against heat and smoke.¹⁹ The open yard (now Section F) was a necessary part of a foundry that was designed for storing raw materials. The stepped roof shape of the two foundry sections of the Ajax Metal Company Plant, with its monitor windows and tall ceiling heights, was a common design practice for foundries to help disperse the intense heat and smoke and to let daylight into the building, reducing the need for electricity.²⁰

The interior plan of the building expanded as the plant evolved, but was designed with firewalls between the various portions of the building to meet fire codes and for safety with only metal fire doors in between. The building retains an inverted U-shaped plan with fork-lift wide sliding metal fire-door openings between each section. The easternmost sections, A and B, are interconnected on the first floor at the party wall. Section B also directly connects to Section C, built in 1944. The second floor of Section B, which serves as an office, is accessible only from the first floor of Section B and was extended through the second floor of Section C in 1944 when the entire northwest corner section was rebuilt. Section F, originally a courtyard, is centrally located and serves as a pass-through space to the surrounding sections. The warehouse at the southwest corner, Section E, communicates directly to Section D, also known as Foundry No. 1. Section G was added in 1931 and connects through doorways in the firewalls with Sections F (former courtyard) and A (the foundry).

¹⁵ Zoning Permit #30910 (10 November 1971), Department of Licensing & Inspections, City of Philadelphia.

¹⁶ Zoning Permit #126760 (August 5 1987), Department of Licensing & Inspections, City of Philadelphia.

¹⁷ Zoning Permit #91631 (May 14 1993), Department of Licensing & Inspections, City of Philadelphia.

¹⁸ Zoning Permit #444664 (1 November 2001), Department of Licensing & Inspections, City of Philadelphia.

¹⁹ Betsy Hunter Bradley, *The Works: The Industrial Architecture of the United States* (New York: Oxford University Press, 1999), 40.

²⁰ Bradley, 41.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 12 Ajax Metal Company Plant, Philadelphia County, PA

Criterion A: Significance in Industry

The Ajax Metal Company Plant is significant under Criterion A in the area of Industry for its association with the Ajax Metal Company, a leader in Philadelphia's metal industry in the production of brass and bronze ingots and commercial production of electric furnaces during the period of significance, 1907-1950.

History of the Ajax Metal Company

The Ajax Metal Company was formed as a smelting operation in Philadelphia in 1880 by German-born metallurgist Francis J. Clamer. The company existed until 1950, when it was purchased by a smelting company in Chicago, IL. Over the course of its existence, in addition to brass and bronze smelting the Ajax Metal Company formed several subsidiaries to handle other interests of the company, including engineering consulting and electric furnace production and development. During the period of significance, four subsidiaries of the Ajax Metal Company were formed:

- Ajax Electric Furnace Corporation in 1916
- Ajax Engineering Corporation, the scientific wing of the company, formed in c.1917
- Ajax Electrothermic Corporation in 1918
- Ajax Electric Company, created in 1931

Throughout the period of significance, the company's headquarters and offices for the smelting operation and its subsidiaries were always located at the 46 Richmond Street plant. Of these four subsidiaries, only two of these operated out of the 46 Richmond Street plant: the Ajax Electric Furnace Corporation from 1916 to 1931, and the Ajax Electric Company from 1931 to 1954. The other two, the Ajax Engineering Corporation and the Ajax Electrothermic Corporation, were based in Trenton, NJ. One of the subsidiaries, the Electric Furnace Corporation, was removed to another facility two blocks away at 1108 Frankford Avenue in 1931 to make room for the newest electric furnace subsidiary, the Ajax Electric Company. Although this facility still stands, it is physically separated from the Ajax Metal Company Plant by the elevated Interstate-95 and only functioned as overflow space during its usage of just over twenty years.

Summary table showing the history of the Ajax Metal Company

Ajax Metal Company (Parent Company and Subsidiaries companies), at the 46 Richmond Street plant, 1880 - 1954			
Name	Product	Place	Dates
1. Ajax Metal Company	Brass and Bronze alloys, ingots	46 Richmond Street Sections A-F	1880 - 1950
2. Ajax Electric Furnace Corporation	Ajax-Wyatt electric furnaces	46 Richmond Street	1916 - 1931
3. Ajax Electric Company	Ajax-Hultgren salt bath electric furnaces	46 Richmond Street, Section G	1931- 1954

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 13 Ajax Metal Company Plant, Philadelphia County, PA

Ajax Subsidiaries and Facilities not included in this nomination			
Ajax Electric Furnace Corporation	Ajax-Wyatt electric furnaces	1108 Frankford Ave.	1931– 1959
Ajax Electrothermic Corporation	Ajax-Northrup Furnaces	Trenton, NJ at 636 E. State Street	1918 – c.1959
Ajax Engineering Corporation	Engineering services; research	Trenton, NJ	c.1917-1959

Founder Francis Clamer received his technical training in Camden, NJ as a gold- and silversmith. He then began experimenting with the production of anti-frictional metal for bearings for the railroad industry²¹; he first accomplished this in 1868.²² By 1880, with the assistance of several wealthy backers in the train and trolley industry such as William L. Elkins and Joseph G. Hendrickson, Clamer founded his own metalworking company at 46 Richmond Street in Philadelphia and named it the Ajax Metal Company.²³ The head of Ajax, a hero from Greek mythology, was adopted as the Ajax Metal Company corporate logo at this time. Early work at the Ajax Metal Company Plant consisted of melting brasses and bronzes in conventional fuel-fired furnaces using crucibles (clay containers), an uneconomical and dangerous method of liquefying metals.

In 1897, Clamer's son, Guillian, took over the family business after he received his doctoral degree in chemistry from the University of Pennsylvania. Acting as vice-president and later president of the Ajax Metal Company, Guillian went on to experiment further in the new science of metallurgy to find economical ways of melting metals and producing new alloys. Clamer established a chemical laboratory at the Ajax Metal Company Plant, one of the first in the field of metallurgy.²⁴

By 1914, according to period advertisements, Ajax Metal Company had opened a southern plant in Birmingham, AL.²⁵

²¹ An antifriction alloy is a metal that is used to reduce friction in a machine such as a bearing. Bearings were commonly used in the railroad industry to hold or guide moving machine parts and minimize friction and wear. In its simplest form, a bearing consists of a cylindrical shaft or journal, and a mating hole.

²² Elwood Roberts, *Biographical Annals of Montgomery County, Pennsylvania*, Vol. 1 (1904), 58.

²³ Roberts, 58.

²⁴ "Dr. Guillian H. Clamer, 87, Metallurgist in Philadelphia," *New York Times* (14 April 1963).

²⁵ Birmingham, AL was one of the nation's most successful centers for iron and steel production by the early twentieth century. Langdon White, "The Iron and Steel Industry of the Birmingham, Alabama, District," *Economic Geography*, 4, 4 (Oct 1928), 349.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 14 Ajax Metal Company Plant, Philadelphia County, PA



Advertisement featured in *Metal Statistics* (New York: American Metal Market Company, 1914), 176.

In 1916, the Ajax Metal Company had grown to 213 employees: an office staff of 27 workers, 180 male workers and six female workers.²⁶ Two years later, the number of employees rose to 292 workers at the Ajax Metal Company Plant.²⁷

The rise in employee number by 1918 corresponds to the period when the Ajax Metal Company began manufacturing electric furnaces for smelting brass and bronze. The electric furnace was a new technology of the early 20th century that made use of electricity to quickly and cleanly melt and contain molten metals such as brass. Using electromagnetic fields, the process itself generated its own heat and reduced the need for fossil fuel like coal, and was therefore a less expensive method of smelting. The electric furnace also decreased the loss of zinc, a metal used to make brass, translating into less waste. The electric furnace replaced the traditional method of melting metals in crucibles, containers made of imported clay and graphite; with the arrival of World War I, it was increasingly difficult and expensive to obtain the clay and graphite used to make the crucibles.²⁸ In addition, the demand for brass increased for war purposes, such as artillery shells for cartridge cases, and spurred many companies and even the Bureau of Mines to invent electric furnaces for efficiently melting brass that did not need the crucibles. Scientist H.W. Gillette of the Bureau of Mines began experimenting with electric brass melting in 1912 at Cornell University and shared their findings in 1914.²⁹ One of the earliest electric brass furnaces

²⁶ Commonwealth of Pennsylvania, Department of Internal Affairs, *Industrial Directory of Pennsylvania* (Philadelphia: Chamber of Commerce and Board of Trade, 1916), 823.

²⁷ Russell Andrew Kazal, *Becoming Old Stock: The Paradox of German-American Identity* (Princeton: Princeton University Press, 2004), 293. This information was derived from "Ajax Metal Co., Phila., Pa," box 1 "AB-AN," PPS; Form no. 2. Correspondence of the Philadelphia District Office, Plant Protection Section, Office of the Director of Intelligence, Records of the War Department General and Special Staffs, Record Group 154, National Archives and Records Administration, Mid-Atlantic Region, Philadelphia.

²⁸ "Electric Brass Furnace Perfected by Bureau of Mines," *The Edison Monthly* 10 (June 1917), 380.

²⁹ H.W. Gillette and E.L. Mack, "Electric Brass Furnace Practice" *Bulletin* 202, United States Bureau of Mines (Washington, D.C.: Washington Government Printing Office, 1922), 11-12.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 15 Ajax Metal Company Plant, Philadelphia County, PA

developed by the Bureau of Mines was the Rocking electric furnace, first sold in 1917.³⁰ Other designs also were created by a variety of scientists and furnace makers, but few of these furnaces became as successful as Ajax according to the Bureau of Mines *Bulletins* of this period.

Based on Guiliam Clamer's registered U.S. patents, Clamer worked with several scientific innovators in the 1910s and 1920s to develop electric furnaces for melting brass and later manufactured these furnaces at the Ajax Metal Company Plant in Philadelphia.³¹ In 1912, Dr. Clamer collaborated with inventor Dr. Edwin Northrup, an innovative physics professor at Princeton University. The result was the Ajax-Northrup Furnace, a small electric high-frequency induction furnace designed by Northrup just after the end of World War I.³² Together, in 1918 Northrup and Clamer founded a subsidiary of the Ajax Metal Company known as the Ajax Electrothermic Corporation to produce the Ajax-Northrup Furnace. Dr. Northrup ran the Ajax Electrothermic Corporation division in a four-story factory at 636 E. State Street in Trenton, NJ beginning in 1918 (extant).³³

Dr. Clamer developed another electric furnace with scientist James Wyatt at the Ajax Metal Company Plant in 1916: the Ajax-Wyatt electric furnace.³⁴ A subsidiary of the Ajax Metal Company known as the Ajax Electric Furnace Corporation was set up at 46 Richmond Street to begin producing the Ajax-Wyatt electric furnaces.³⁵ These innovative furnaces utilized a low-frequency current with submerged resistor for melting brass and bronze.³⁶ The electric furnaces were produced and sold from the Ajax Metal Company Plant through 1929, at which point the Ajax Electric Furnace Corporation was moved to a new facility at 1108 Frankford Avenue, two blocks north of the Richmond Street plant.³⁷ The Ajax Metal Company Plant also used the Ajax-Wyatt furnaces for their own use.

³⁰ "Electric Brass Furnace Perfected by Bureau of Mines".

³¹ "Dr. Guiliam H. Clamer, 87, Metallurgist in Philadelphia," *New York Times* (14 April 1963).

³² An induction electric furnace used a high frequency current and was capable of reaching high temperatures. J.N. Pring, *The Electric Furnace* (London: Longmans, Green and Co., 1921), 350.

³³ *EMF Electrical Year Book* (Chicago: Electrical Trade Publishing Company, 1921), 15.

³⁴ Gillette and Mack, *Bulletin 202*, 3. United States Patent Office, Patent No.1201671 for James Wyatt, assignor to the Ajax Metal Company, Philadelphia, PA, Filing date: Jan 24, 1916, Issue date: Oct 17, 1916.

³⁵ Reverse telephone directories for 1927 through 1970s, Free Library of Philadelphia, Newspaper Department.

³⁶ "U.S. Sues 2 Firms to Recover Profit," *Evening Bulletin* (16 April 1946), Temple Urban Archives, Temple University, Philadelphia, PA.

³⁷ Gillette and Mack, *Bulletin 202*, 273. In 1929, the new two-story brick facility was opened for the Ajax Electric Furnace Company at 1108 Frankford Avenue in Philadelphia, two blocks north of the Richmond Street plant (extant). This building is not included in the nomination.

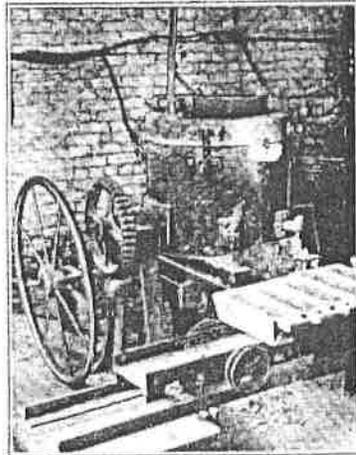
United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 16 Ajax Metal Company Plant, Philadelphia County, PA

BUREAU OF MINES

BULLETIN 202 PLATE XXI



A FIRST COMMERCIAL AJAX-WYATT FURNACE

Bulletin 202, United States Bureau of Mines (Washington, D.C.: Washington Government Printing Office, 1922), 235.

By 1919, the Ajax Metal Company had grown to a total of 340 workers at the entire Philadelphia facility.³⁸ The number of employees increased slightly in 1922 to 352, but fell to 229 workers in 1925.³⁹ At the beginning 1930s, the company still maintained 210 employees.⁴⁰ During this time, Ajax Metal Company Plant continued smelting brass, tin, copper, lead, zinc, and antimony alloys. These alloys included: "Manganese Bronze," an alloy used by automobile manufacturers; "Bull Babbitt," a soft, silvery, antifriction alloy for railroad ball bearings; and "Plastic Bronze," an alloy containing thirty percent lead for high-grade machinery bearings.⁴¹ The plastic bronze was made in two grades at the Ajax Metal Company Plant: type A for general railway work; and type B for rolling-mill bearings and similar applications.⁴²

In 1931, the Ajax Metal Company introduced an improved electric furnace for melting metal to the industry: the Ajax-Hultgren salt bath furnace.⁴³ In the early 1930s, the Ajax Electric Company, a subsidiary of the Ajax Metal Company, was founded to develop and market the Ajax-Hultgren

³⁸ Commonwealth of Pennsylvania, Department of Internal Affairs, *Industrial Directory of Pennsylvania* (Philadelphia: Chamber of Commerce and Board of Trade, 1919), 864.

³⁹ *Industrial Directory of Pennsylvania* for years 1922 and 1925, 407 and 497 respectively.

⁴⁰ *Industrial Directory of Pennsylvania* for 1931, 575.

⁴¹ William Benham Price, Richard Kidder Meade, *The Technical Analysis of Brass, and Non-ferrous Alloys*, (New York: John Wiley & Sons, Inc., 1917), 6.

⁴² Samuel L. Hoyt, *Metallograph: Part II Metals and Common Alloys* (New York: McGraw Hill Books, Inc., 1921), 127.

⁴³ Royal H. Plenty, "Ajax Electric Co. Wins Top Spot in Its Field," *Philadelphia Inquirer* (22 February 1954), Temple Urban Archives, Temple University.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 17 Ajax Metal Company Plant, Philadelphia County, PA

custom industrial salt bath furnaces.⁴⁴ In order to provide additional space for furnace production, the Ajax Metal Company constructed a two-story brick addition for the Ajax Electric Company at the south end of the 46 Richmond Street plant along Frankford Avenue (Section G, included of this nomination).⁴⁵

The Ajax Metal Company supported 208 workers at the entire 46 Richmond Street plant in 1938 and included those workers at the Ajax Electric Company (Section G).⁴⁶ In the late 1930s, Ajax Metal Company produced eighteen different types of brass, bronze, nickel and aluminum alloys in ingots, white metals of all kinds, and electric furnaces at their Philadelphia headquarters, and maintained district offices in New York, Chicago and Cleveland.⁴⁷ The Ajax Metal Company's "Ajax plastic bronze," was a specialty bronze alloy made largely of copper and zinc.⁴⁸ Having a light golden color, Ajax plastic bronze was much stronger than standard bronzes and was used in the marine industry for making ship propellers for salt water applications and the automobile construction.⁴⁹ Another product, the Ajax manganese copper, was an extremely strong alloy employed for castings. Its uses in marine industry included non-corrosion uses where lightness was needed such as hand brakes and brackets.⁵⁰

In August of 1941, all of the thirty-two employees of the Ajax Electric Company went on strike for twenty-four hours. The strike was broken when the workers agreed to join the Local 155 United Electrical Radio and Machine Workers of America, with the provided increase of wages by ten cents per hour and vacations paid by the Ajax Electric Company.⁵¹

Although only a few hundred of the Ajax-Hultgren furnaces were produced by the Ajax Electric Company in the early years, these electric furnaces began to win acceptance when the government specified them to help with smelting metal for military use.⁵² In 1942, the Ajax

⁴⁴ The Ajax-Hultgren Salt Bath Furnace melted metals into liquid by immersing the metals in a bath of one or more molten chemical salts. The salts, heated using closely spaced electrodes, were brought to temperatures as high as 2400 degrees Fahrenheit. The molten salt then became a conductor of electricity, circulated through the metal and heated the liquid evenly. Ajax Metal Company patented and developed this technology in 1931 after obtaining the world rights to the technology from inventor Axel Hultgren, a Swedish metallurgist. Royal H. Plenty, "Ajax Electric Co. Wins Top Spot in Its Field," *Philadelphia Inquirer* (22 February 1954), Temple Urban Archives, Temple University.

⁴⁵ "This section of the building, Section G, was also known as 908-910 Frankford Avenue, identified as being at the corner of Frankford and Delaware Avenues. U.S. Sues 2 Firms to Recover Profit," *Evening Bulletin* (16 April 1946), Temple Urban Archives, Temple University, Philadelphia, PA. Period metallurgical trade journals contained many advertisements for Ajax Electric Co., Inc. with this address as well. *Metal Progress*, 73 (January 1958-June 1958), 113.

⁴⁶ *Industrial Directory of Pennsylvania for 1938*, 493.

⁴⁷ Advertisement for the Ajax Metal Company, *The Foundry* (June 1939), 22.

⁴⁸ Frank Ward Sterling, *Marine Engineers' Handbook* (New York: McGraw-Hill Publishing, 1920), 74.

⁴⁹ Sterling, 62.

⁵⁰ Sterling, 62.

⁵¹ "2 Plants and Union Agree," *Evening Bulletin* (21 August 1941), Temple Urban Archives, Temple University, Philadelphia, PA.

⁵² Royal H. Plenty, "Ajax Electric Co. Wins Top Spot in Its Field," *Philadelphia Inquirer* (22 February 1954),

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 18 Ajax Metal Company Plant, Philadelphia County, PA

Electric Company procured a government contract of \$1,655,000 for the production of metal heating furnaces for the Defense Plant Corporation.⁵³ The Ajax Electric Company also sold the Ajax-Hultgren electric furnaces to prominent companies in the automotive industry, the aviation industry, the farm equipment industry and the ball bearing industry.⁵⁴

The Ajax Metal Company also received government defense contracts for the production of brass and lead ingots during World War II.⁵⁵ With the demand for metals during World War II, consequently the number of personnel at the Richmond Street complex rose: in 1942, Ajax Metal Company employed 324 persons, an increase of more than one hundred workers.⁵⁶

After the end of World War II, the demand for electric furnaces leveled off, and the number of Ajax Metal Company employees dropped to 233 workers.⁵⁷ However, by this time over 2,000 Ajax-Hultgren furnaces were in use throughout the world.⁵⁸ The need for electric furnaces again swelled in 1953, which spiked the number of Ajax-Hultgren furnaces in use in the United States and internationally to 4,000.⁵⁹ The size of the furnaces specified also increased in the years following the war, from a 50 kilowatt furnace to a 100 kilowatt furnace by 1952.

The Ajax Electric Company division at the southern end of the building, Section G, maintained 27 employees when they went on strike for increased wages in 1948; by this time all of the workers of the Ajax Electric Company were members of the CIO Progress Metal Workers Council of the Industrial Union of Marine and Shipbuilders Workers.⁶⁰ Despite the relatively small number of workers employed at the Ajax Electric Company, by the mid-1950s, the Ajax Electric Company was the "world's largest manufacturer of electric heat treating furnaces exclusively."⁶¹

The Ajax Metal Company existed until 1950, when the smelting concerns at 46 Richmond Street were purchased by H. Kramer, a smelting company based in Chicago, IL, and was renamed Ajax Metal Division of H. Kramer & Company, Chicago, IL. This marks the end of the period of significance. H. Kramer & Company purchased the Ajax Metal Company plant for \$275,000, the

Temple Urban Archives, Temple University.

⁵³ The Ajax Electric Furnace Corporation at 1108 Frankford Avenue had received a government contract for \$915,000 for producing the Ajax-Wyatt electric furnaces for the war effort. After the end of World War II, the Government filed a suit against Ajax Electric Company and Ajax Electric Furnace Corporation for gaining excessive profits from these government contracts. "2 Plants and Union Agree," *Evening Bulletin* (21 August 1941), Temple Urban Archives, Temple University, Philadelphia, PA.

⁵⁴ "Ajax Electric Co. Wins Top Spot in Its Field".

⁵⁵ "War Plant Burns in 3-Alarm Fire," *Evening Bulletin* (18 September 1944), Temple Urban Archives, Temple University.

⁵⁶ *Industrial Directory of Pennsylvania* (1942), 455.

⁵⁷ *Industrial Directory of Pennsylvania* (1947), 476 and *Industrial Directory of Pennsylvania* (1950), 436.

⁵⁸ "Ajax Electric Co. Wins Top Spot in Its Field".

⁵⁹ "Ajax Electric Co. Wins Top Spot in Its Field".

⁶⁰ "Ajax Workers Strike," *Evening Bulletin* (17 August 1948), Temple Urban Archives, Temple University, Philadelphia, PA.

⁶¹ "Ajax Electric Co. Wins Top Spot in Its Field".

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 19 Ajax Metal Company Plant, Philadelphia County, PA

equipment, inventory, and the trade marks, but not the remaining Ajax subsidiaries.⁶² After 1950, the four subsidiaries of Ajax Metal Company were reformed under a new parent company named Ajax Electro Metallurgical Corporation. In 1954, all operations associated with the Ajax Electro Metallurgical Corporation were relocated to plants elsewhere in Philadelphia.

After 1950, the plant on Richmond Street was then known as the Ajax Metal Company Division of H. Kramer & Company, and operated with the same employee staff.⁶³ The Ajax Metal Company Division of H. Kramer & Company continued to produce brass and bronze ingots, phosphorous copper, babbitts (soft white metals) and other alloys for the next two decades.⁶⁴

The other former subsidiaries of the Ajax Metal Company were reformed in 1950 under a new parent company known as the Ajax Electro Metallurgical Corporation; the company continued to manufacture electric furnaces and equipment for use in the metallurgical field from other locations outside of the 46 Richmond Street plant.⁶⁵ Several associated companies were formed: the Ajax Electric Furnace Corporation (at 1108 Frankford Avenue), the Ajax Electrothermic Corporation (in Trenton, NJ) and Ajax Engineering Corporation (also based in Trenton, NJ).⁶⁶ Dr. Guillian Clamer continued to serve as the president and advisor of the four associated companies. Only the southern wing of 46 Richmond Street (Section G) continued to be briefly used by Ajax Electric Company division of the newly formed Ajax Electro Metallurgical Corporation until 1954, when the Ajax Electric Company was moved to a new building at 2820 Tioga Street, near the corner of Richmond and Tioga Streets.⁶⁷ In 1974 the Ajax Electric Company was relocated to Huntingdon Valley, PA, a suburb of Philadelphia, and remains in business today producing electric salt bath furnaces.⁶⁸

Comparisons with local brass foundries

Throughout the period of significance, from 1907 through 1950, the Ajax Metal Company was a local leader in brass and bronze production and specialty bronze ingots.

By the 1910s, after building the new foundries on Richmond Street, Ajax Metal Company had the largest local workforce for smelting alloys based on industrial directories beginning in 1913, and period technical resources such as yearbooks and directories.⁶⁹ In 1919, there were

⁶² The subsidiaries were not sold as part of this agreement. "Frankford Av. Plant is Sold," *Evening Bulletin* (5 May 1950), Temple Urban Archives, Temple University. "H. Kramer Purchases Ajax Metal," *The Foundry* (June 1950), 159.

⁶³ "H. Kramer Purchases Ajax Metal".

⁶⁴ In 1971, the company closed its operations in Philadelphia and sold the facility to Unique, Inc. for warehousing merchandise.

⁶⁵ "H. Kramer Purchases Ajax Metal" .*The Foundry* (June 1950), 159.

⁶⁶ Reverse telephone directory for Philadelphia for various years in the 1950s, Free Library of Philadelphia, Philadelphia, PA.

⁶⁷ *Steel Processing and Conversion*, 35 (1949), 281.

⁶⁸ Email correspondence between preparer and John Barry, president of Ajax Electric Company, Huntingdon Valley, PA, conducted on March 25, 2008.

⁶⁹ The employment statistics for the Ajax Metal Company in the *Industrial Directory of Pennsylvania* do not

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 20 Ajax Metal Company Plant, Philadelphia County, PA

approximately forty-seven firms in Philadelphia that smelted alloys into ingots.⁷⁰ More than half of these had a total workforce of less than fifty workers and many as few as two workers. The five brass and bronze smelting companies with personnel over 100 included: Ajax Metal Company, 340; Phosphor Bronze Smelting Company at 2200 Washington Avenue (extant) with 246 workers; White & Brother, Inc., located at Hedley & Richmond Streets (no longer standing), with 168 employees; Eynon Evans Manufacturing Company at 15th & Clearfield Streets (no longer standing), having 117 workers; and the American Manganese Bronze Company at Rhawn and Hegerman Streets in the Holmesberg neighborhood of Philadelphia (no longer standing), with eighty-nine personnel.

Another way to quantify the size of the Ajax Metal Company is by the number of electric furnaces that were used for its smelting operation. In 1922, according to a study by the U.S. Bureau of Mines, the Ajax Metal Company had four Ajax-Wyatt electric furnaces in operation in the plant on Richmond Street, each one with a total of 150 kw of collective power.⁷¹ Haines, Jones & Cadbury (later known as Hajoca), manufacturers of plumbing fittings, used only one Ajax-Wyatt electric furnace (a 60 kw furnace) at their plant on Buttonwood and North 12th Streets (no longer standing).⁷² The only other Philadelphia smelter that year using electric furnaces was White & Brothers, with one Baily electric furnace at Hedley & Richmond Streets (demolished) with 105 kw of power and one Detroit Rocking furnace with 30 kw, a total of 135 kw (plant is no longer standing).⁷³

Although the Ajax Metal Company was a large operation locally, it was a small operation by national standards. The largest smelting operation included in this U.S. Bureau of Mines survey of 1922 was the American Brass Company of Waterbury, CT, which had thirty-two of the 60 kw Ajax-Wyatt electric brass furnaces.⁷⁴

The Ajax Metal Company was also a local leader for the production of specialty alloys. According to the *Annual Chemical Directory of the United States of 1918*, Ajax Metal Company was the only lead antimonial producer in Philadelphia, an extremely hard alloy used for anti-friction applications such as machine ball bearings for railways.⁷⁵ This same year, the Ajax Metal Company was one of only two companies in the United States to make acid resistant metal; the

consistently break down the individual subsidiary employment records. Therefore, in some years the electric furnace production is noted separately in a different category, and in some years it is not. The number of electric furnace employees, however, was usually below 30 persons on those years that it was broken down separately.

⁷⁰ *Industrial Directory of Pennsylvania* (1919), 864-870.

⁷¹ Gillette and Mack, *Bulletin 202*, 7

⁷² Gillette and Mack, *Bulletin 202*, 7

⁷³ Gillette and Mack, *Bulletin 202*, 7

⁷⁴ Gillette and Mack, *Bulletin 202*, 7

⁷⁵ B.F. Lovelace, editor, *Annual Chemical Directory of the United States* (Baltimore, MD: Williams & Wilkins Company, 1918), 109. Period definition of lead-antimony based on "Antifriction metals," *The Encyclopedia Americana* (New York: Encyclopedia American Corporation, 1918), 31.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 21 Ajax Metal Company Plant, Philadelphia County, PA

other was the United Lead Company located in New York City.⁷⁶ The Ajax Metal Company also produced tin, one of three Philadelphia companies to do so in 1918.⁷⁷

As for babbitt or white metal, the Ajax Metal Company competed with three other companies in 1918 locally: American Manganese Bronze Company, which had approximately 89 workers in 1919; the North American Smelting Company at 9th and Thompson Streets (15 workers in 1922); and U.S. Smelting Works at 15th and Spring Garden Streets (no employment datum).⁷⁸ In 1920, Ajax Metal Company was listed in the *Annual Chemical Directory of the United States* as one of three national manufacturers of manganese copper (the other two being in New York City and Boston).⁷⁹

By 1925, Ajax Metal Company ranked second in terms of workforce out of the approximately forty-five smelting foundries in Philadelphia, with personnel of 229 employees.⁸⁰ The Phosphor Bronze Smelting Company had a slightly large workforce with 241 workers. Two other companies that were the next largest were: the Atlas Ball Company at 4th and Glenwood with 173 employees; and Haines, Jones & Cadbury, makers of brass fittings for plumbing at 1112 Buttonwood Street in the Fishtown neighborhood with 126 workers. The rest of the companies had less than fifty workers, and many of these had less than ten.

In 1931, Ajax Metal Company was the second largest brass foundry in Philadelphia with 210 employees.⁸¹ In comparison, Phosphor Bronze Smelting Company listed 207 employees that same year. American Manganese Bronze Company had ninety-one workers in 1931. The largest bronze and brass smelting company in Philadelphia was Cramp Brass & Iron Foundries at Richmond and Norris Streets (demolished), which had 321 workers in this department in 1931. However, Cramp did not smelt metals for ingot production like Ajax Metal Company, but melted the metals into hardware such as screws and propellers for shipbuilding.

By the late 1930s, Ajax Metal Company's chief competitor was Phosphor Bronze Smelting Company, makers of Elephant Bronze (a trademarked bronze alloy). According to the *Industrial Directory of Pennsylvania* for 1938, there were fifty-three companies in Philadelphia County that smelted brass and bronze. Ajax Metal Company listed 208 employees in 1938. Phosphor Bronze Company was in the lead with 310 workers that year. The three other closest competitors were Hajoca (Haines, Cadbury and Jones) makers of plumbing fittings with 129 employees; Janney Cylinder Company, manufacturers of centrifugal castings and wrought-iron products at 7425 State Road in Northeast Philadelphia had 135 workers; and White Brothers Smelting at 119.⁸²

⁷⁶ *Annual Chemical Directory of the United States* (1918), 116.

⁷⁷ *Annual Chemical Directory of the United States* (1918), 168, 237.

⁷⁸ *Annual Chemical Directory of the United States* (1918), 38.

⁷⁹ *Annual Chemical Directory of the United States* (1920), 26.

⁸⁰ *Industrial Directory of Pennsylvania* (1925), 497-498.

⁸¹ *Industrial Directory of Pennsylvania* (1931), 574-575.

⁸² *Industrial Directory of Pennsylvania* (1938), 493-494.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 22 Ajax Metal Company Plant, Philadelphia County, PA

During World War II, Ajax Metal Company emerged as the largest brass and bronze smelting firm in Philadelphia, likely a result of defense contracts and the demands for ingots and electric furnaces for the war effort. Out of the fifty-one brass foundry companies in Philadelphia, in 1942, Ajax had reported 324 workers. Phosphor Bronze Smelting Company had listed 239; Janney Cylinder Company came in third with 202 workers; White Brothers Smelting Company was a close fourth at 200 employees.⁸³

By 1950, Ajax Metal Company's workforce had returned to its pre-World War II status of 211 workers. By this time, the firm was the third largest of the forty-five companies listed in Philadelphia as brass and bronze smelters, and followed only Janney Cylinder Company's 398 employees and Phosphor Bronze Smelting Company's 296.⁸⁴

In 1953, after Ajax Metal Company had been purchased by H. Kramer & Company, the number of employees at 46 Richmond Street rose to 254, and was the second largest brass and bronze smelting firm in Philadelphia behind Janney Cylinder Company's 415 workers.⁸⁵

Comparisons with other electric furnace manufacturers

The Ajax Metal Company was the only consistent, sizable producer of electric furnaces in Philadelphia during the period of significance and a leading brass electric furnace manufacturer in the country for much of the twentieth century. The importance of manufacturing electric furnaces for smelting brass cannot be underestimated, as brass was a key metal for use in military shells and marine-related equipment.

Statistics gathered from period journals reveal that as early as 1918 the Ajax Metal Company had become an important national manufacturer of nonferrous (non-iron) electric furnaces. In March 1918, *The Iron Age* had concluded that there were 261 electric brass furnaces of all types in use in the United States; the Ajax Metal Company's Ajax-Wyatt electric furnaces accounted for 118 of the 261 furnaces in use, some 45 percent of the national total.⁸⁶ In comparison, the Baily electric furnace, produced by the Electric Furnace Company of Alliance, OH had sold sixty-one furnaces; in third place was the Detroit Rocking furnace, made by the Detroit Electric Furnace Company of Detroit, MI with forty-four electric furnaces.⁸⁷ The only other Philadelphia furnace manufacturer included by Cone was the American Metallurgical Corporation with one furnace known as the Weeks furnace.⁸⁸ Although the Weeks furnace existed in theory, it was an experimental furnace that was not in use even three years, according to the Bureau of Mines.⁸⁹

⁸³ *Industrial Directory of Pennsylvania* (1942), 455-456.

⁸⁴ *Industrial Directory of Pennsylvania* (1950), 436-437.

⁸⁵ *Industrial Directory of Pennsylvania* (1953), 416.

⁸⁶ Edwin F. Cone, "Status of the Electric Non-Ferrous Industry, with Special Reference to the Foundry," *Transactions of the American Foundrymen's Association, Proceedings of the Twenty-Fifth Annual Meeting October 4-8, 1920*, 29 (Chicago, IL: American Foundrymen's Association, 1921), 555.

⁸⁷ Cone, 557.

⁸⁸ Cone, 557.

⁸⁹ Gillette and Mack, *Bulletin* 202, 17.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 23 Ajax Metal Company Plant, Philadelphia County, PA

In the late 1910s, the Ajax-Wyatt furnace was favorably reviewed by the U.S. Bureau of Mines for melting brass. By the end of 1918, the U.S. Bureau of Mines had determined that three types of furnaces in the country—the Ajax-Wyatt, the Baily, and the Detroit rocking furnace—had “forged ahead and were doing the bulk of the commercial electric-furnace melting.”⁹⁰ Of these three, the Ajax-Wyatt furnace had the most electric furnaces in use in the country in 1922, according to a bulletin published by the U.S. Bureau of Mines. The Bureau of Mines’ *Bulletin* of 1922 summarized its findings concerning the Ajax-Wyatt electric furnace: “The Ajax-Wyatt is the most efficient electric brass furnace yet developed, in the economical use of power when operated 24 hours a day. Furnaces of other types are seldom very efficient in so small a size as 30 or 60 kw, but it is doubtful if any other type of furnace of whatever size can operate on yellow brass 24 hours a day with as low power consumption per ton of metal melted as the 60 or 80 kw Ajax-Wyatt.”⁹¹ Also in 1922, the Ajax Metal Company was credited by having had produced and sold 176 Ajax-Wyatt furnaces in the United States, (four of which were used by the Ajax Metal Company for producing ingots).⁹² In comparison, only eighty-three Baily furnaces were in use in 1922, followed by the sixty Detroit Rocking furnaces.⁹³

Significance in Industry

During the period of significance, the Ajax Metal Company Plant contributed to the industrial strength of Philadelphia and housed one of Philadelphia’s leading brass and bronze foundries. The production of these specialty metal ingots at the Ajax Metal Company was indispensable to other Philadelphia and regional industries, such as the manufacturing of ships, planes and automobiles. For nearly fifty years, the firm produced the trade-recognized “ajax metal” and “ajax plastic bronze,” both exclusively used by the Pennsylvania Railroad Company for making train car ball bearings.⁹⁴ The Ajax Metal Company Plant also served as the scientific test lab and production facility for electric brass furnaces, making the Ajax Metal Company a national leader in the manufacture of cutting-edge, energy-efficient electric furnaces. During World War II, the Ajax Metal Company was an important resource for the government both in metals and electric furnace production.

⁹⁰ Gillette and Mack, *Bulletin* 202, 3.

⁹¹ Gillette and Mack, *Bulletin* 202, 265.

⁹² Gillette and Mack, *Bulletin* 202, 9.

⁹³ Gillette and Mack, *Bulletin* 202, 9.

⁹⁴ Price, 7.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 9 Page 1 Ajax Metal Company Plant, Philadelphia County, PA

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United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 9 Page 2 Ajax Metal Company Plant, Philadelphia County, PA

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United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 9 Page 3 Ajax Metal Company Plant, Philadelphia County, PA

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United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 9 Page 4 Ajax Metal Company Plant, Philadelphia County, PA

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United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 10 Page 1 Ajax Metal Company Plant, Philadelphia County, PA

Boundary Description

See attached site map showing the National Register boundary that is drawn to scale.

Boundary Justification

The nominated property includes the entire property historically associated with Ajax Metal Company Plant located at 46 Richmond Street during the period of significance. Although the company had three subsidiaries located in Philadelphia and Trenton, NJ, the company's headquarter offices were located at 46 Richmond Street throughout the existence of the firm. The closest in proximity to the plant on Richmond Street is the small facility at 1108 Frankford Avenue, a two-story brick building constructed in c.1930. This building contained production facilities for the Ajax Electric Furnace Corporation from 1931 to 1959. This building is now separated physically from the 46 Richmond Street plant by two blocks and the elevated bridge of Interstate-95.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number Photographs Page 1 Ajax Metal Company Plant, Philadelphia County,
PA

The following photographs all contain this information:

Ajax Metal Company Plant
46 Richmond Street
Philadelphia County, PA
Robert Powers
April 18, 2008
Powers & Company, Inc.
211 N. 13th Street, Suite 500
Philadelphia, PA 19107

The enclosed photographs meet the NR-NHL permanence standard and were all printed using Epson UltraChrome K3 Ink on Epson Premium Lustre photopaper. If you have any questions, please contact Bob Shoup at Arrow Photographs: (610) 326-4420.

Photo #	View
1.	North elevation, looking SW
2.	North elevation, Detail of Section C, looking SE
3.	North elevation, looking SE
4.	West elevation, looking SE
5.	West elevation, looking E
6.	Southwest elevation on E. Allen Street, looking NW
7.	Southwest elevation, looking N
8.	Southwest and south elevations, looking N
9.	South elevation on Laurel Street, looking NW
10.	South and east elevations, looking NW
11.	Detail of windows on east elevation, looking W
12.	East elevation, looking SW
13.	East elevation, looking NW
14.	East elevation, looking SW
15.	Detail of east elevation, looking W
16.	Section A, detail of ceiling framing in foundry
17.	Section A, looking N
18.	Section A, looking S
19.	Section B, 1 st floor, looking N
20.	Section B, 2 nd floor, looking S
21.	Section C, 2 nd floor, looking W
22.	Section C, staircase to 1 st floor, looking N

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number Photographs Page 2 Ajax Metal Company Plant, Philadelphia County,
PA

23.	Section D, detail of foundry ceiling
24.	Section D, detail of crane in foundry
25.	Section D, detail of overhead crane by Box & Hoist
26.	Section D, looking S
27.	Section F, looking S
28.	Section G, looking N

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number Photographs Page 3

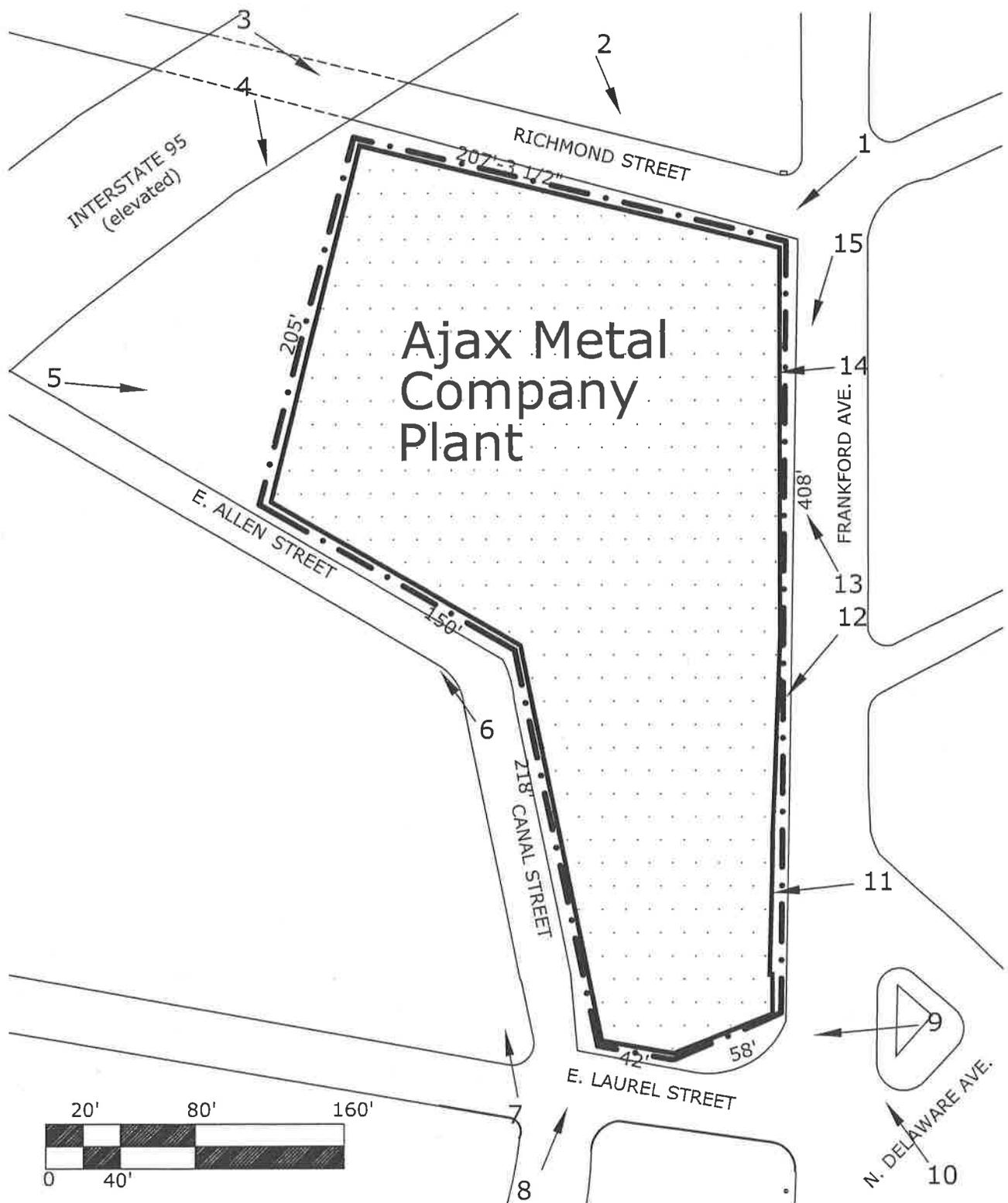
Ajax Metal Company Plant
Philadelphia County, PA

PHOTOGRAPH LIST

Ajax Metal Company Plant
Philadelphia County, Pennsylvania
Nick Kraus
Heritage Consulting Group, April 2012

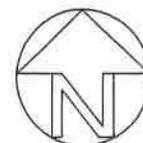
Digital Photographs

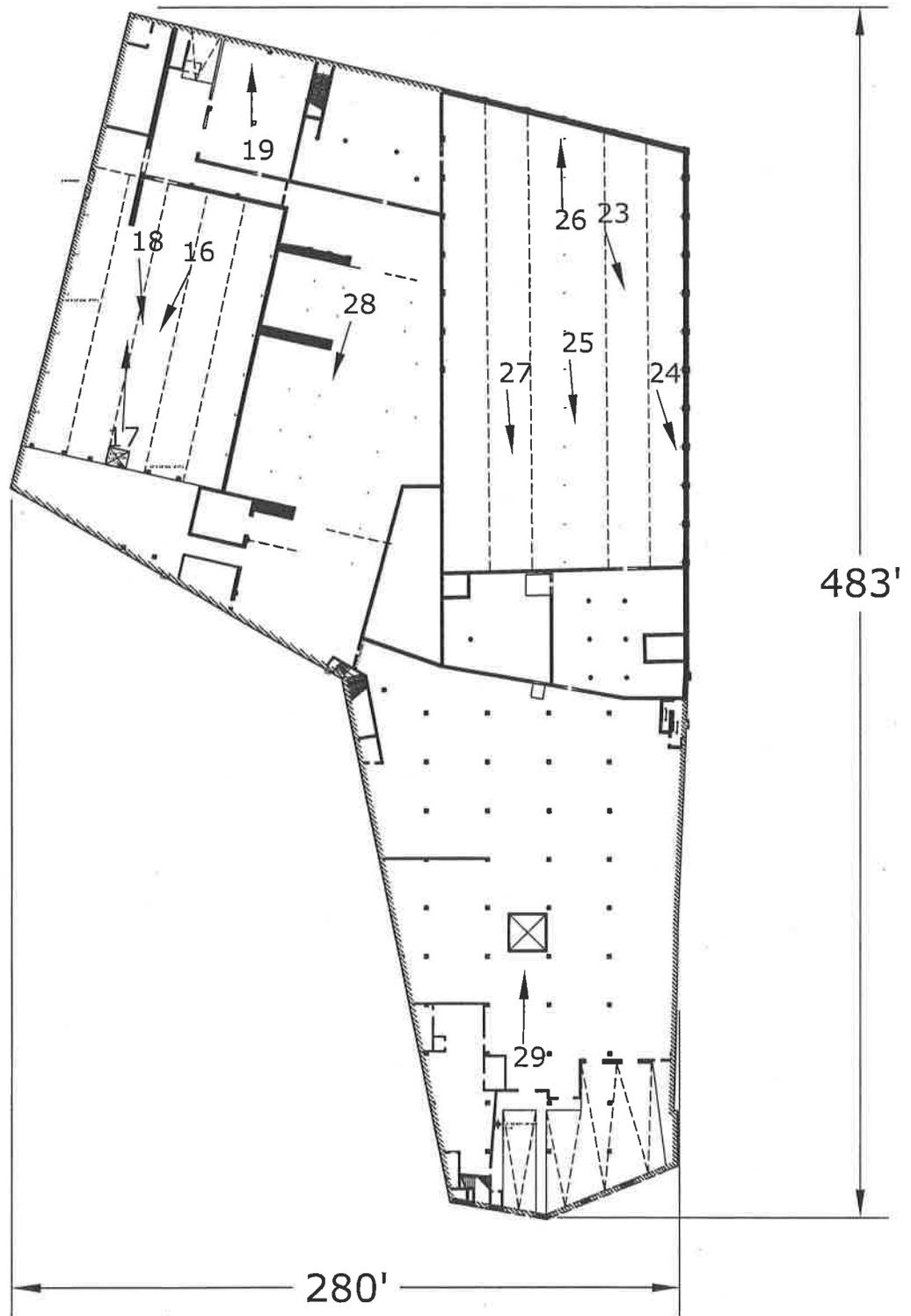
Photo #	View
30	North Elevation, Looking Southwest
31	East Elevation, Looking Southwest
32	Southeast Corner, Looking Northwest
33	South Elevation, Looking North
34	Southwest Elevation, Looking North
35	Southwest Elevation, Looking Northwest
36	West Elevation, Looking East
37	Section A, Looking South
38	Section B, 2 nd Floor, Looking South
39	Section C, 2 nd Floor, Looking North
40	Section C, 2 nd Floor, Looking East
41	Section D, Looking South
42	Section D, Looking South
43	Section G, Looking North



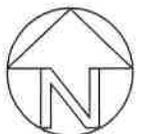
Ajax Metal Company Plant
 46 Richmond Street
 Philadelphia County, PA
 Site Plan and Photograph Locator Plan
 Scale: 1" = 80'

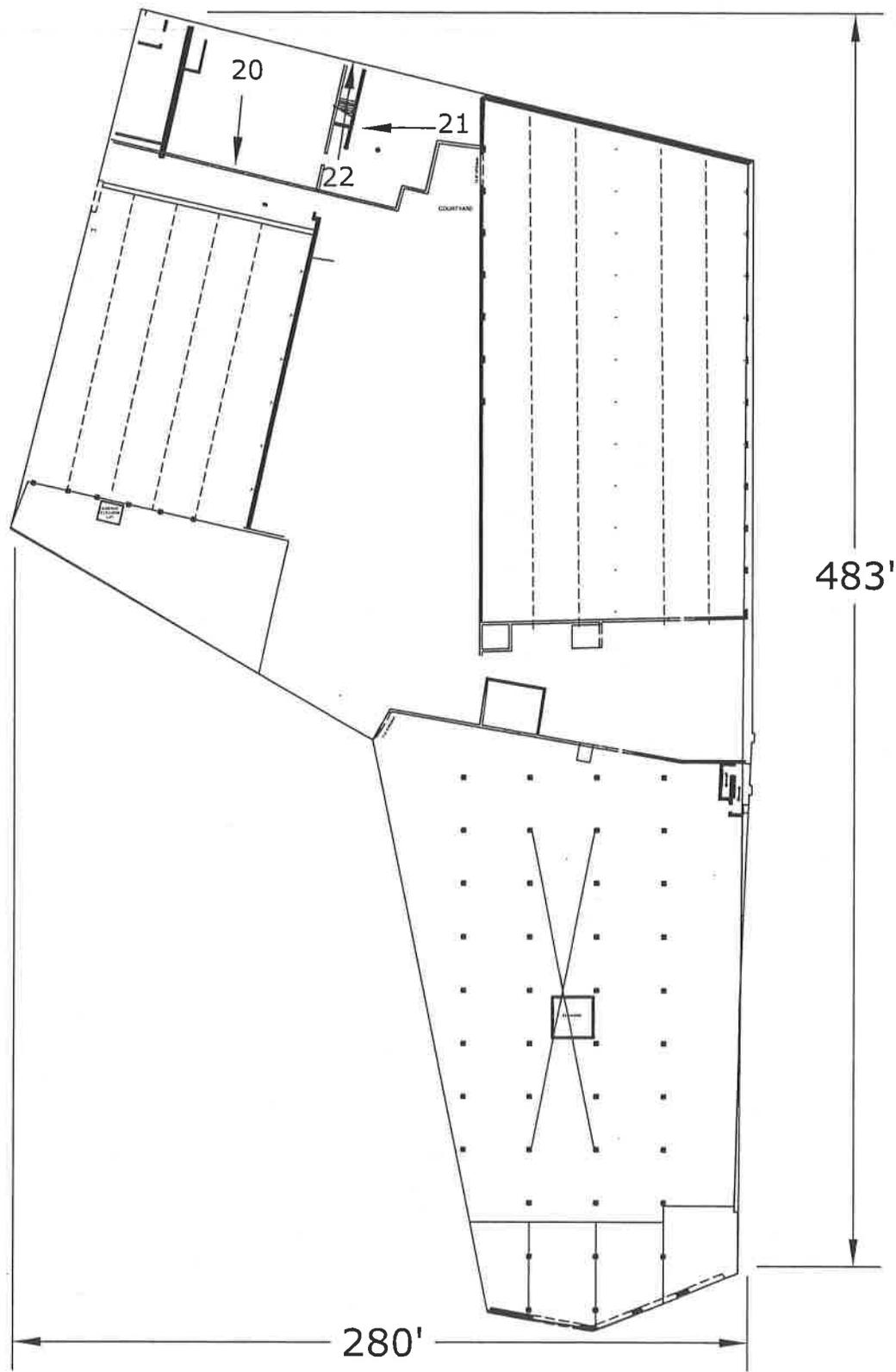
— · — National Register Boundary



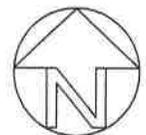


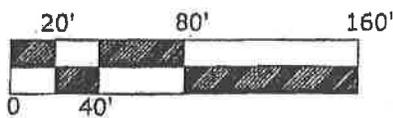
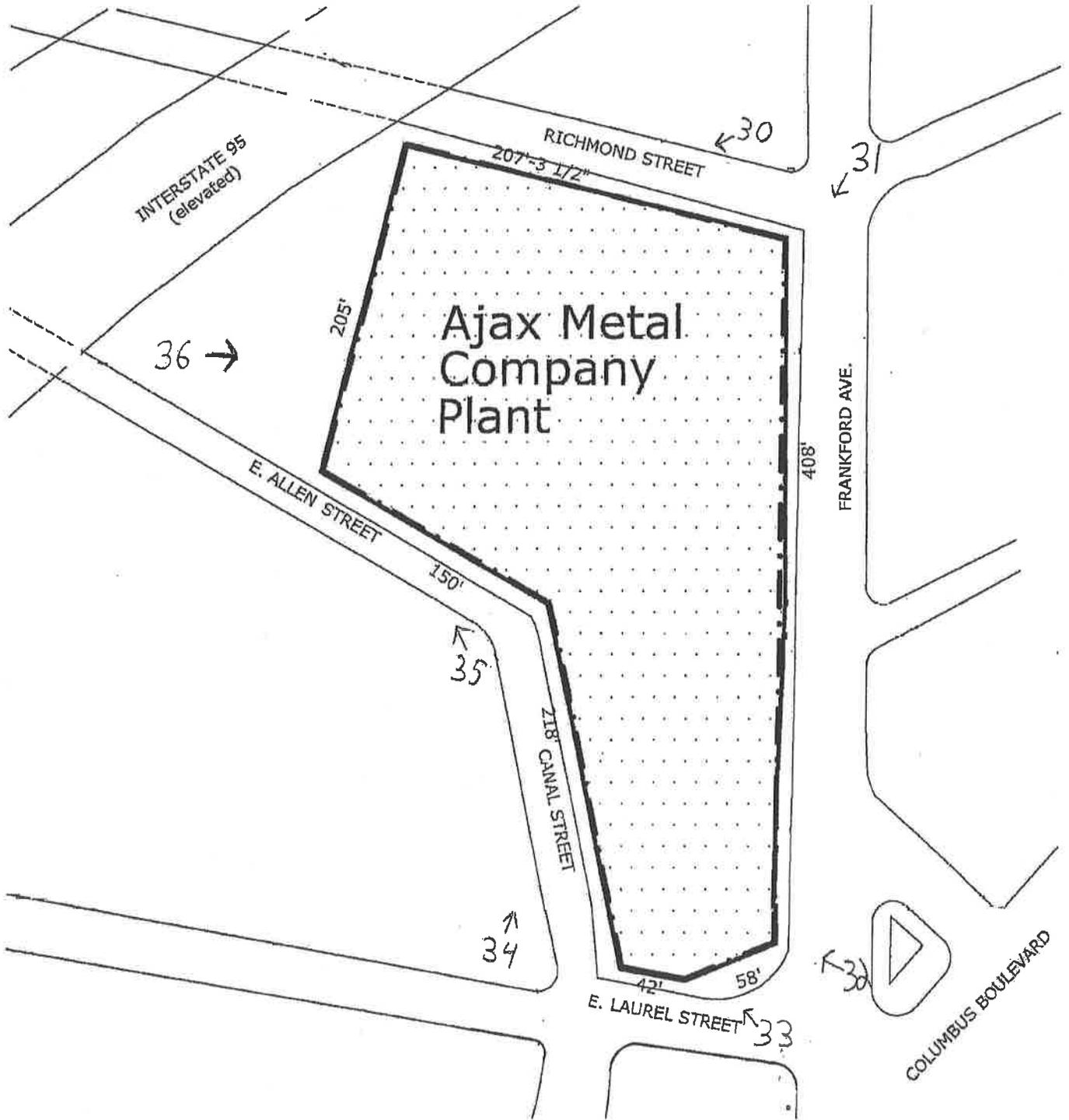
Ajax Metal Company Plant
 46 Richmond Street
 Philadelphia County, PA
Existing 1st Floor Plan and Photograph Locator Plan
 Scale: n.t.s.





Ajax Metal Company Plant
46 Richmond Street
Philadelphia County, PA
Existing 2nd Floor Plan and Photograph Locator Plan
Scale: n.t.s.

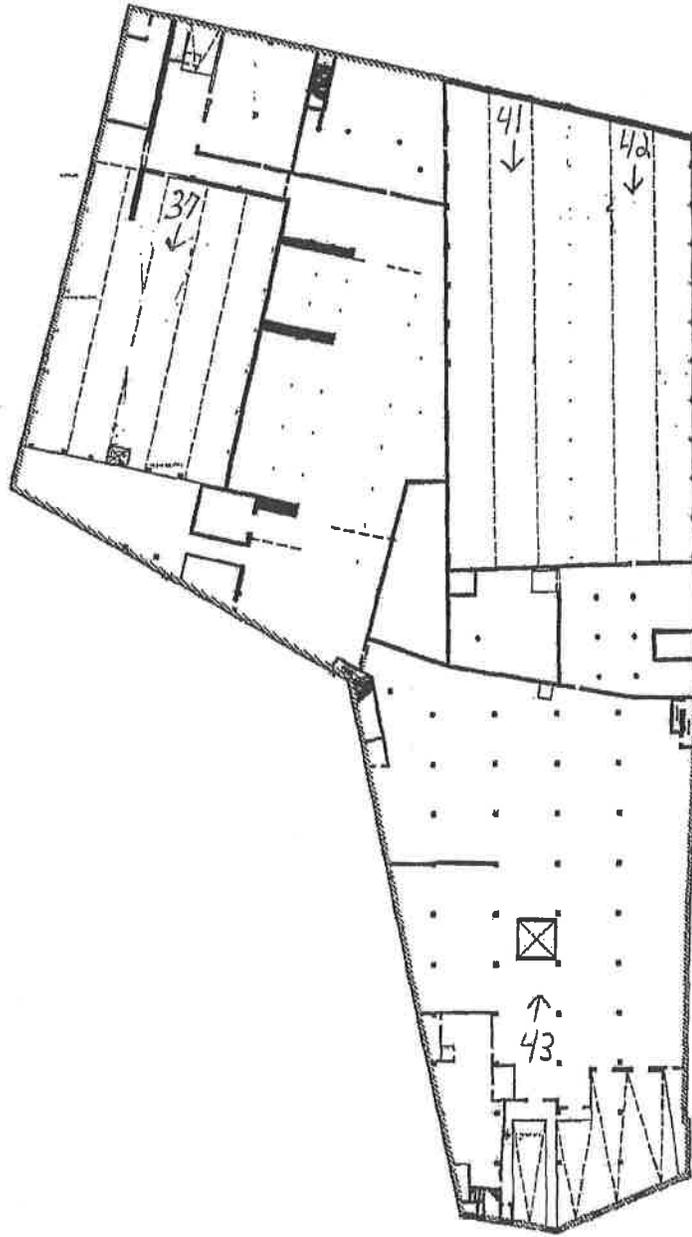




--- National Register Boundary

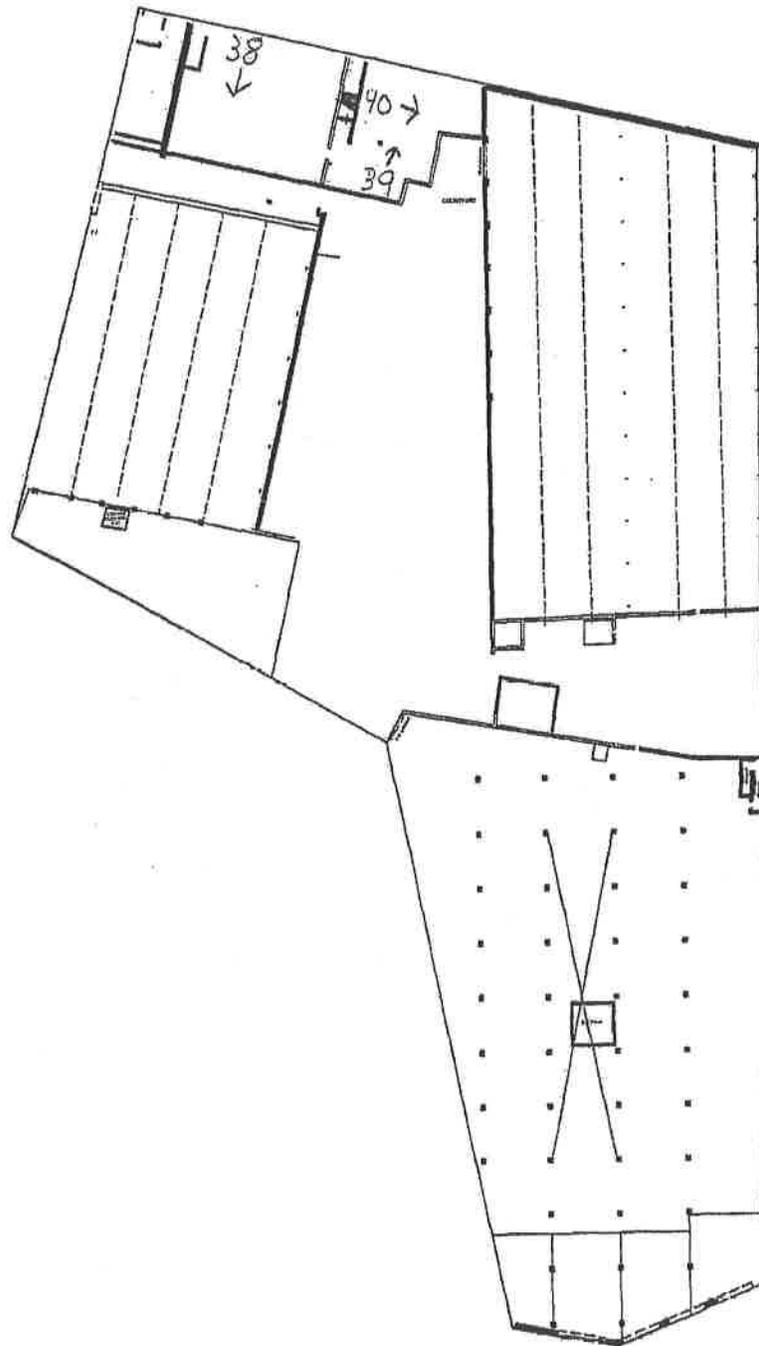
Ajax Metal Company Plant
 46 Richmond Street
 Philadelphia County, PA
Site Plan and Photograph Locator Plan
 Scale: 1" = 80'
 Additional Photos, April 2012





Ajax Metal Company Plant
46 Richmond Street
Philadelphia County, PA
Existing 1st Floor Plan and Photograph Locator Plan
Scale: n.t.s.
Additional Photos, April 2012





Ajax Metal Company Plant
46 Richmond Street
Philadelphia County, PA
Existing 2nd Floor Plan and Photograph Locator Plan
Scale: n.t.s.
Additional Photos, April 2012





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250 000 FEET (PA SOUTH)
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25
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BETSY ROSS BRIDGE 4 MI. TRIENTON, N. J. 30 MI.

Ajox Metal Co. Plant
Philadelphia Co PA
46 Richmond Street

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THE AXON METAL CO.

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THE LIGHTING COMPANY
MANUFACTURERS OF INDUSTRIAL LIGHTS
AND FIXTURES



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CHOICE
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SPECIALIZE IN DOLLAR & VARIETY STORE MERCHANDISE
215-211-9210





THE FISH MARKET
1000 10th Avenue
New York, N.Y. 10018

113

4473 89

41 112

1401 80A







SALE/LEASE
619-834-0000
1-2 MONTHS
NO. 12 1999

IN BACK OF BUILDING
GEN TIREM
BALLONS

SALE OR LEASE
510-834-8000

ATECO

SALE/LEASE
610-834-8000
2.4 ACRE/17,000 S.F. BUILDABLE
HANSBERRY

205-635-2463
IS STORE MEAN
IN BACK OF BUILD
500-700-1000
DEEPING SUPLE

NO LEFT TURN
← USE
RIGHT WALK

RENTAL

HEAR



SALE OR LEASE
710-834-8000

ATECO

SALE OR LEASE
710-834-8000

NO PARKING

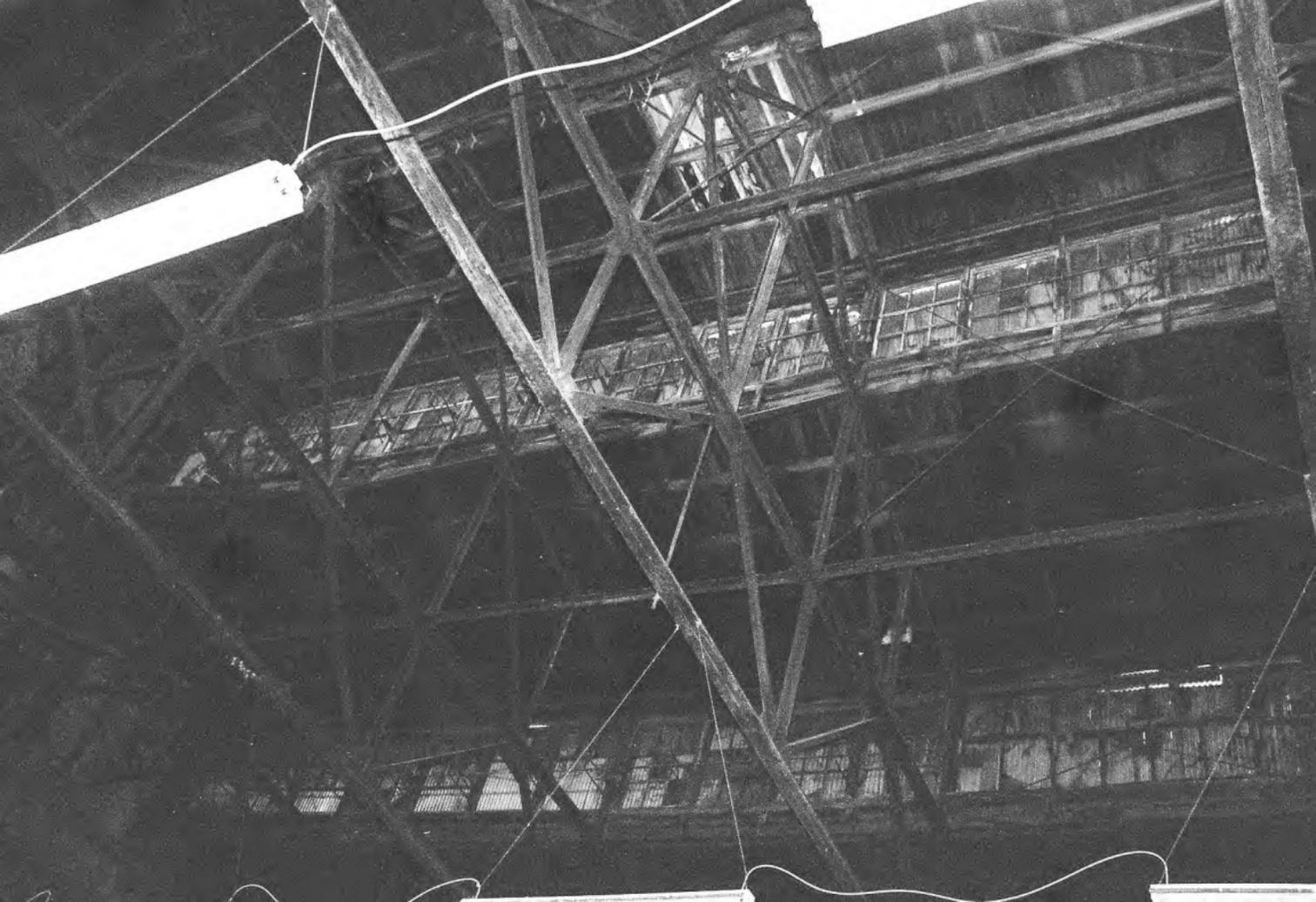




























BOX
PHILADELPHIA PA.





BUX
PHILADELPHIA





FRAGILE







DE JIMBO SOD

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GRAFFITI

GRAFFITI



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BY THE
PROPERTY OWNER



SUMMIT THROUGH EPIC





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WALL

NOTES

WALL

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