NOMINATION OF HISTORIC BUILDING, STRUCTURE, SITE, OR OBJECT
PHILADELPHIA REGISTER OF HISTORIC PLACES
PHILADELPHIA HISTORICAL COMMISSION

SUBMIT ALL ATTACHED MATERIALS ON PAPER AND IN ELECTRONIC FORM (CD, EMAIL, FLASH DRIVE)
ELECTRONIC FILES MUST BE WORD OR WORD COMPATIBLE

1. ADDRESS OF HISTORIC RESOURCE *(must comply with an Office of Property Assessment address)*

Street address: 1615-31 N Delaware Avenue

Postal code: 19125

2. NAME OF HISTORIC RESOURCE

Historic Name: Bradlee & Co.'s Empire Chain Works

Current/Common Name:

3. TYPE OF HISTORIC RESOURCE

☒ Building ☐ Structure ☐ Site ☐ Object

4. PROPERTY INFORMATION

Condition: ☐ excellent ☐ good ☒ fair ☐ poor ☐ ruins

Occupancy: ☐ occupied ☐ vacant ☐ under construction ☒ unknown

Current use: Commercial/industrial/storage

5. BOUNDARY DESCRIPTION

Please attach a narrative description and site/plot plan of the resource's boundaries.

6. DESCRIPTION

Please attach a narrative description and photographs of the resource's physical appearance, site, setting, and surroundings.

7. SIGNIFICANCE

Please attach a narrative Statement of Significance citing the Criteria for Designation the resource satisfies.

Period of Significance (from year to year): from c. 1905-10 to 1949

Date(s) of construction and/or alteration: c. 1905-10

Architect, engineer, and/or designer: Unknown

Builder, contractor, and/or artisan: Unknown

Original owner: Bradlee & Co.

Other significant persons: Unknown

CRITERIA FOR DESIGNATION:

The historic resource satisfies the following criteria for designation (check all that apply):

- ☐ (a) Has significant character, interest or value as part of the development, heritage or cultural characteristics of the City, Commonwealth or Nation or is associated with the life of a person significant in the past; or,
- ☐ (b) Is associated with an event of importance to the history of the City, Commonwealth or Nation; or,
- Crit. C rejected ☒ ~~(c) Reflects the environment in an era characterized by a distinctive architectural style;~~ or,
- ☐ (d) Embodies distinguishing characteristics of an architectural style or engineering specimen; or,
- ☐ (e) Is the work of a designer, architect, landscape architect or designer, or engineer whose work has significantly influenced the historical, architectural, economic, social, or cultural development of the City, Commonwealth or Nation; or,
- ☐ (f) Contains elements of design, detail, materials or craftsmanship which represent a significant innovation; or,
- ☐ (g) Is part of or related to a square, park or other distinctive area which should be preserved according to an historic, cultural or architectural motif; or,
- Crit. I added by CHD and PHC ☐ (h) Owing to its unique location or singular physical characteristic, represents an established and familiar visual feature of the neighborhood, community or City; or,
- ☒ (i) Has yielded, or may be likely to yield, information important in pre-history or history; or
- ☒ (j) Exemplifies the cultural, political, economic, social or historical heritage of the community.

8. MAJOR BIBLIOGRAPHICAL REFERENCES

Please attach a bibliography.

9. NOMINATOR

Organization Keeping Society of Philadelphia Date 10/2/2019

Name with Title Oscar Beisert, architectural historian Email keeper@keepingphiladelphia.org

Street Address 1315 Walnut Street, Suite 320 Telephone 717-602-5002

City, State, and Postal Code Philadelphia, PA 19107

Nominator ☐ is ☒ is not the property owner.

PHC USE ONLY

Date of Receipt: 10/2/2019

☒ Correct-Complete ☐ Incorrect-Incomplete Date: 5/14/2020

Date of Notice Issuance: 5/15/2020

Property Owner at Time of Notice:

Name: LMM Associates

Address: 1615 N Delaware Ave

City: Philadelphia State: PA Postal Code: 19125

Date(s) Reviewed by the Committee on Historic Designation: 6/17/2020, rec. Criteria I and J

Date(s) Reviewed by the Historical Commission: 8/14/2020

Date of Final Action: 8/14/2020, Criteria I and J

☒ Designated ☐ Rejected

Nomination

for the

Philadelphia Register of Historic Places

Figure 1. Looking south. Source: Pictometry, Atlas, City of Philadelphia, 2019.

Bradlee & Co.'s

Empire Chain Works of Philadelphia

Built 1905 - 10

1615-31 North Delaware Avenue
Philadelphia, Pennsylvania 19125-4318

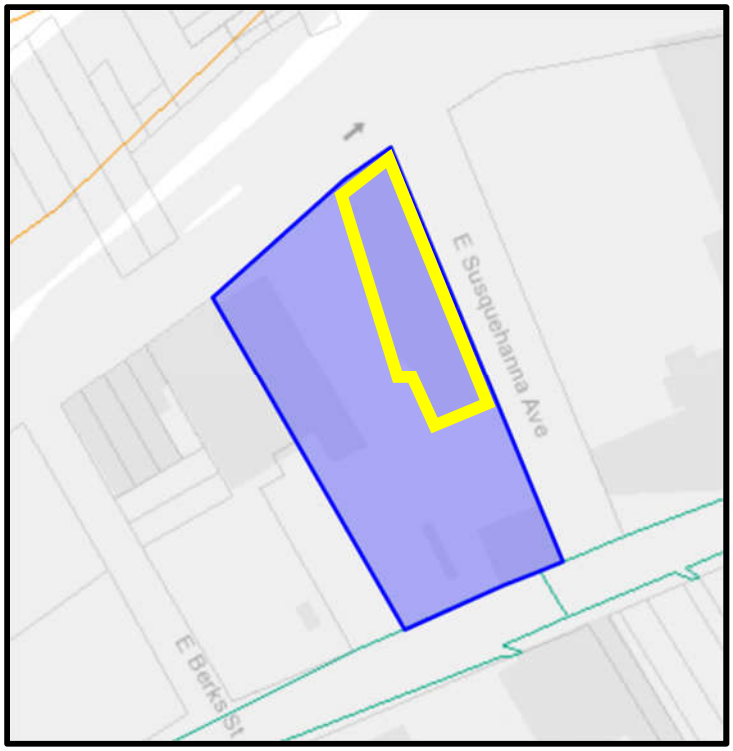


Figure 2. The boundary for the subject property is delineated in blue with the more specific boundary in yellow. Source: Philadelphia Water.

5. BOUNDARY DESCRIPTION

The boundary for the subject designation is as follows:

Beginning at a point on the southeasterly side of Delaware Avenue at the distance of one hundred forty feet, one and seven-eighths inches northeastwardly from the northeasterly side of Berks Street thence extending north fifty-six degrees forty minutes three seconds east along said side of Delaware Avenue four feet eleven and three-eighths inches to a point an angle in the said side of Delaware Avenue, thence extending north fifty degrees eleven minutes three seconds east still by said side of Delaware Avenue one hundred thirty-seven feet nine and one-quarter inches to a point another angle in the said side of Delaware Avenue thence extending north fifty-nine degrees five minutes forty-eight seconds east still by said side of Delaware Avenue thirty-one feet nine inches to a point on the southwesterly side of Susquehanna Avenue thence extending south twenty degrees fifty-one minutes twenty-seven seconds east along the said side of Susquehanna Avenue three hundred thirty-three feet eleven and three-eighths inches to a point on the northwesterly side of Beach Street, thence extending south sixty-nine degrees eight minutes thirty-three seconds west along said side of Beach Street one hundred twenty-six feet one inch to a point, thence extending north twenty-eight degrees fifty-eight minutes twenty-seven seconds west partly through a thirteenth inches party wall and partly through the center line of another thirteen inches party wall two hundred eighty-five feet five and three-eighths inches to the place of beginning.

Being known as 1615-31 N. Delaware Avenue, also known as 1615 N. Christopher Columbus Boulevard. Map Registry No. 017N080157. OPA/BRT Account No. 884587100.

Figure 3. View from North Delaware Avenue at Susquehanna Avenue of the Empire Chain Works. Source: Oscar Beisert, 2019.

6. PHYSICAL DESCRIPTION

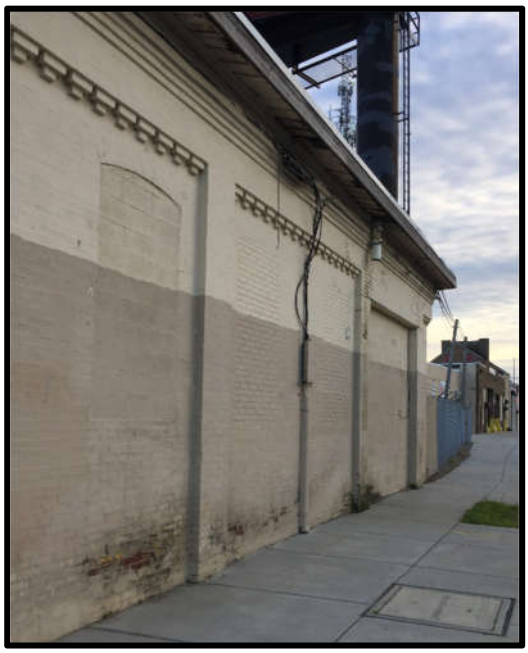
Standing at the north corner of Delaware and Susquehanna Avenues, Bradlee & Co.'s Empire Chain Works at 1615-31 N. Delaware Avenue in the Fishtown neighborhood of the City of Philadelphia is a surviving industrial remnant of the largely lost Delaware River waterfront (Figure 1). Adjacent to the south and southwest are open yards that once served the subject building and its chain-making operations, as well another non-contributing building on the same property. Beyond to the southwest is an early house, built by Fishtown's Baker family, and another small garage building. The subject property is otherwise neighbored primarily by vacant lots and miscellaneous commercial buildings.

Originally extending to Beach Street, the subject building is a long (roughly 187 feet) and narrow (roughly 47 feet) one-story structure (Figures 1 and 3). It is built mostly of red brick although the non-historic rear wall (the southeast elevation) appears to be of some kind of masonry unit construction. Designed and built as what appears to be "pilaster construction," the primary (northwest) and side (northeast) elevations are the character-defining facades of the subject property (Figures 2-5).[1] The side (southwest) elevation is also comprised of original brick, and its apertures have been partly infilled (Figure 2). The primary (northwest) elevation is a narrow façade of three bays that are delineated by four brick piers, creating recessed brick walls with openings. The recessed bays are created by corbel tables flanked by pilasters. The northernmost bay and the middle bay appear to be of equal size, each of which feature two arched windows per bay that are infilled with non-historic masonry. The third, southwestern most bay is a recessed brick wall. The entire elevation features a cornice composed of four tiers of corbeled brickwork.

Like the primary (northwest) elevation, the side (northeast) elevation defines the building's physical envelope, including a front section and the rear section. Structurally connected to the primary (northwest) elevation, the front section features a low-hipped roof that terminates at the southeast in the form of a gable end. The front block is four bays in depth, delineated by five brick piers with individual corbeled tables that are flanked by pilasters. The two northern most feature recessed brick bays, each of which feature two arched windows per bay that are infilled

[1] Pilaster (or pier) construction is one that employs brick piers between each window bay, providing structural strength and often allowing greater door or window area.

by non-historic stucco. The third and fourth bays are largely comprised of a recessed brick wall that is formed by pilasters and corbeled brick brackets. The entire elevation sits beneath a cornice composed of four tiers of corbel table. The rear section of the building outlines the gable roof, appending the front section. This elevation is comprised of ten bays delineated by eleven brick piers and individual corbel tables that set off ten recessed wall areas, some of which have infilled openings. The entire elevation features a cornice composed of four tiers of corbeled brickwork.



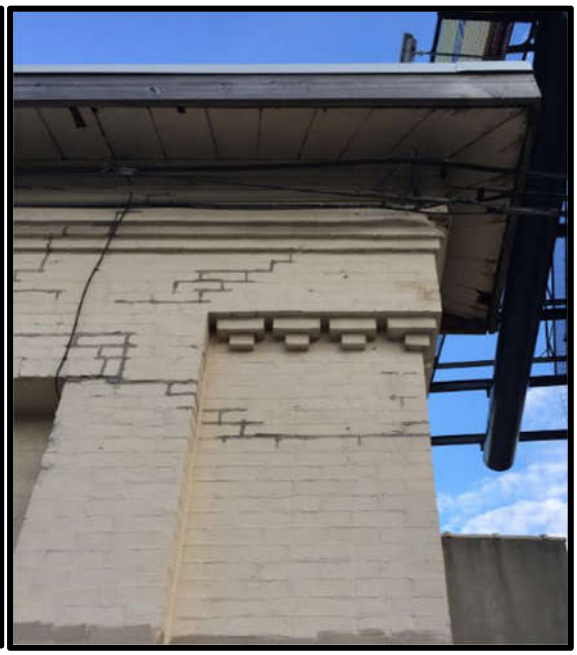


Figure 4. Top left: The primary (northwest) elevation. Figure 5. Top right: Cornice details of the primary (northwest) elevation.

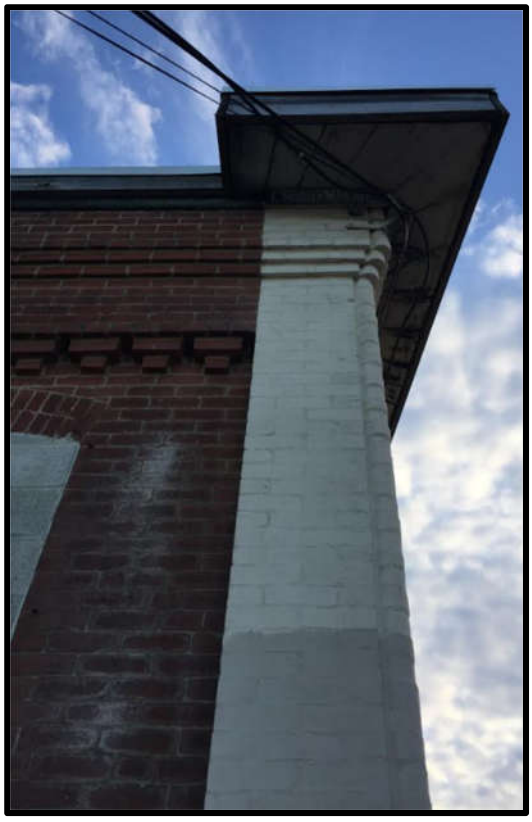



Figure 6. Bottom left: the north corner of the subject property showing the brickwork. Figure 7. Bottom right: The primary (northwest) and the side (southwest) elevations. Source: Oscar Beisert, 2019.

Figure 8. Top: The first two bays of the side (northeast) elevation. Source: Oscar Beisert, 2019.


Figure 9. Bottom: the side (northeast) elevation. Source: Oscar Beisert, 2019.

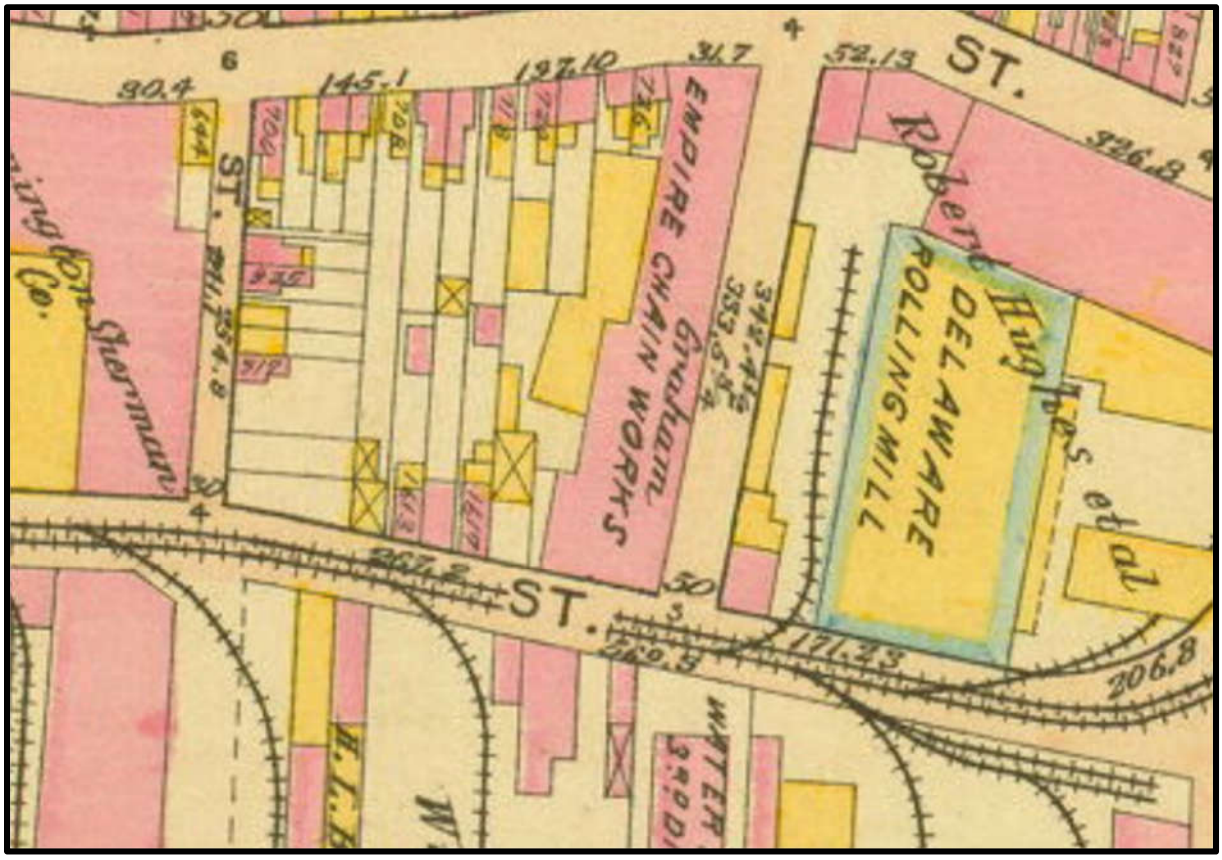


Figure 10. Atlas of the City of Philadelphia, 1895. (Philadelphia: G.W. Bromley and Co.) Source: Greater Philadelphia GeoHistory Network.

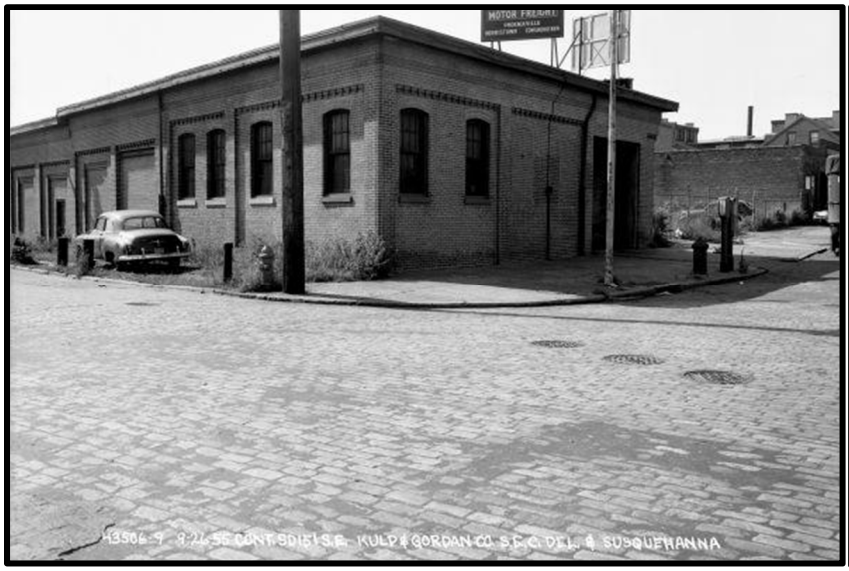
7. STATEMENT OF SIGNIFICANCE

The Empire Chain Works is a significant historic resource that merits designation by the Philadelphia Historical Commission and inclusion on the Philadelphia Register of Historic Places. The subject property satisfies the following Criteria for Designation, as enumerated in Section 14–1004 of the Philadelphia Code:

(c) Reflects the environment in an era characterized by a distinctive architectural style; and

(j) Exemplifies the cultural, political, economic, social or historical heritage of the community.

The period of significance dates from the time Warehouse A was constructed between 1905 and 1910 through the death of the last proprietor, Arthur Howell Gerhard, in 1949.



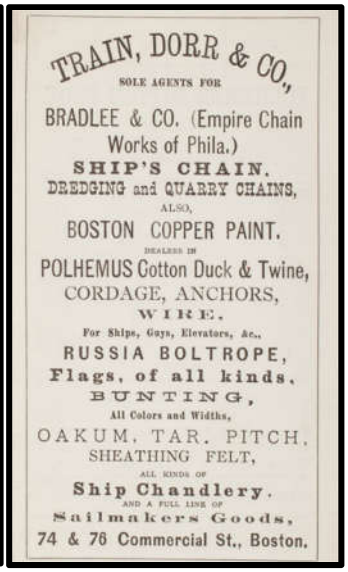


Figure 11. Top left: the subject property at Delaware and Susquehanna Avenues in 1955. Source: Phillyhistory.org. Empire Chain Works at Richmond Street and the Aramingo Canal, in its original location, in 1874. Source: Greater Philadelphia GeoHistory Network. Figure 12. Top right: An 1883 advertisement referencing Bradlee & Co.'s Empire Chain Works of Philadelphia. Source: Historic New England. Figure 13. Bottom: An Advertisement for Bradlee & Co.'s Empire Chain Works, published in the *Marine Journal*, in 1920. Source: *Marine Journal*. (New York: 16 October 1920), 1.

CRITERION J

Founded between 1871 and 1874 and operating as late as 1949, Bradlee & Co.'s Empire Chain Works is significant as a rare surviving industrial building at the Delaware River waterfront that represents a locally, nationally, and internationally recognized firm that manufactured superior products, including "tested chains" and "iron machinery"—specifically iron cable and chain—that was associated with the maritime railroad and shipbuilding industries.[2] As one ne of the two major chain manufacturers in Philadelphia, the firm was known as the "noteworthy manufactures of iron" chains, rope, and other equipment.[3] The subject property was developed as manufactory of the Empire Chain Works between 1886 and 1910, the surviving components of which appear to have been largely built between 1905 and 1910.

[2] *Lloyd's Register of Shipping*. (London: 1906-07), 240.; and *Jahrbuch der Schiffbautechnischen Gesellschaft*. (Berlin: Zehnter Band, 1909), 162.; The rear portion of the subject property was built in 1886, which may or may not have included a portion of the subject building that survives at 1615-31 N. Delaware Avenue, as referenced in "Kensington Improvements," *Philadelphia Builders' Guide*. (Philadelphia: 15 March 1886), 110. The original portion of the Empire Chain Works was located at the rear of the subject property, as is shown in the 1889 and 1895 Atlases of the City of Philadelphia.

[3] *Lloyd's Register of Shipping*. (London: 1906-07), 240.; and *Jahrbuch der Schiffbautechnischen Gesellschaft*. (Berlin: Zehnter Band, 1909), 162.

While the development of metal chain and wire rope as a mass produced material pre-dates the establishment of the company, the foundational period of Bradlee & Co.'s Empire Chain Works is no accident, as it coincides with the late-nineteenth century development of modern metal chain and iron rope forms and types that are still in use today.[4] Around the turn of the twentieth century, the advent of machinery to test iron made the testing of products like iron chain a critical standard of the industry. Riehle Brothers Testing Machine Company's "Improved Lever Chain Testing Machine" was a product manufactured in Philadelphia "for applying tensile strain, bridge irons, wire or hemp rope, etc. etc." The illustrations of Riehle's machinery show it being used in a long building like the subject property, as Bradlee & Co. were listed as the only company in Philadelphia using their products (see Figure 22).[5]

Unlike its local competitor, the Frankford Chain Works, Bradlee & Co.'s Empire Chain Works was advantageously located in Fishtown near important industrial facilities including the Kensington Ship Yard, the pier of William Cramp & Sons' Ship & Engine Building Co. (located on Beach Street), one of the most important shipbuilders in the United States at the time, and the Neafie & Levy Ship & Engine Building Co.'s Penn Works (located between at Allen and Palmer Streets). The shipbuilding industry was extremely significant to the local economy, as well as the cultural and social lives of the community and chain was a crucial product for that industry. The significance of the Bradlee & Co.'s Empire Chain Works and its manufactory is related to the manufacture and operations of maritime railroads and ships. Employing nearly 200 people by the 1880s, the company had diversified to produce the following types of products including "coil chain; crane, cable, etc.; log, rafting, etc.; sling chains; swivel chains; stud chains; and eye bolts" by the 1890s through 1911.[6] Given the information presented above, Bradlee & Co.'s Empire Chain Works at 1615-31 N. Delaware Avenue is a significant industrial building that exemplifies the cultural and economic heritage of Fishtown and Philadelphia's maritime community.

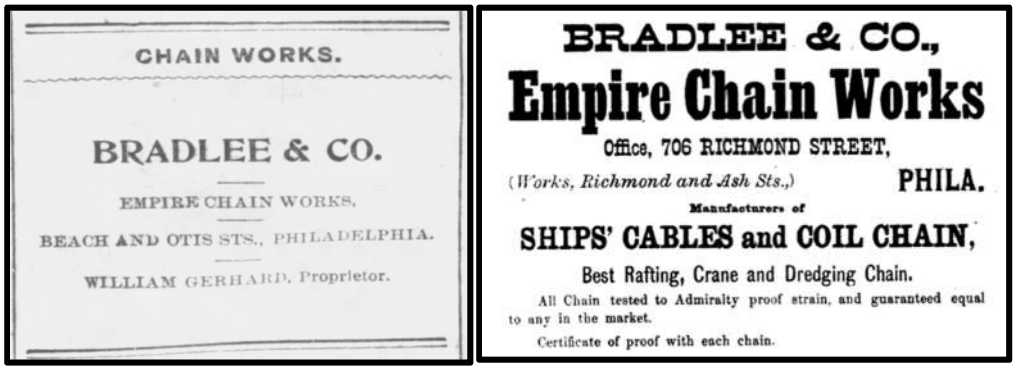


Figure 14. Left: An advertisement for Bradlee & Co.'s Empire Chain Works at Beach and Otis Streets in 1896, by which time it was owned by William Gerhard. Source: "Chain Works," *Lebanon Daily News*. (Lebanon: 29 July 1896), 12. Figure 15. Right: Advertisement for Bradlee & Co.'s Empire Chain Works, published in Poor's Manual of Railroads in 1875. Source: Google Books.

[4] Sayenga, Donald. "Modern History of Wire Rope," www.atlantic-cable.com. Accessed 20 August 2019.
[5] *Catalogue No. 3*. (Philadelphia: Riehle Bros. Testing Machine Co., 1897), 40.
[6] *The Iron Age Manufacture's Index*. (New York: 1897), 14, 27, & 130.; *The Iron Age Manufacture's Index*. (New York: 1911), 37, 81-85, & 403.; and Sterling's Marine Catalog. (New York: Sterling Cooper Corp., 1922), 143-145.

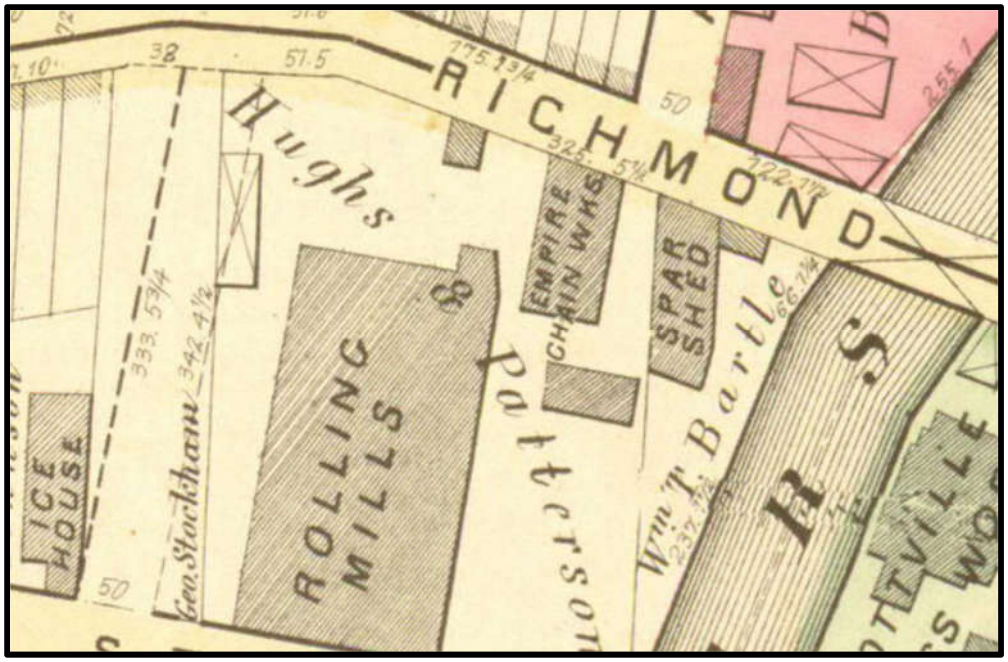


Figure 16. Empire Chain Works at Richmond Street and the Aramingo Canal, in its original location, in 1874. Source: Greater Philadelphia GeoHistory Network.

HISTORIC CONTEXT: Bradlee & Co.'s Empire Chain Works was founded between 1871 and 1874 by Dudley Hall Bradlee (1848-1912), a graduate of Harvard University's Class of 1871.[7] The earliest known manufactory building of the company was located on Richmond Street (now Delaware Avenue) and Gunner's Run (now Aramingo Avenue) adjacent to Hughes & Paterson, iron manufacturers at Richmond (now Delaware Avenue) and Otis Streets (now Susquehanna).[8] The company produced "very heavy chains" that were "forged for marine railways and shipbuilders" and employed roughly 200 men by 1884.[9] In 1886, Hughes & Paterson enlarged their works to the northeast for the construction of a puddle mill, compelling Bradlee & Co. to move to the southwest corner of Beach and Otis Streets (the southern end of the subject property). The new workshop was located at that corner, being 166 feet long by 61 feet wide.[10]

By the 1890s, Bradlee & Co.'s Empire Chain Works had been purchased by William Gerhard (1847-1914), who would soon bring his son, Arthur Howell Gerhard (1877-1949), into partnership.[11] In 1897, the firm was manufacturing the following chain products: "coil chain; crane, cable, etc.; log, rafting, etc.; sling chains; swivel chains; stud chains; and eye bolts," which it would continue to produce until 1911.[12] It was around the time that the Gerhards purchased the business that the works was enlarged with the purchase of the property to the north to then-

[7] *Second Report of the Secretary of Harvard College Class of 1871*. (Boston: Alfred Mudge & Son, June 1874), 7.
[8] "Kensington Improvements," *Philadelphia Builders' Guide*. (Philadelphia: 15 March 1886), 110.
[9] "Trade Jottings.," The Philadelphia Inquirer. (Philadelphia: 16 April 1881), 2.
[10] "Kensington Improvements," *Philadelphia Builders' Guide*. (Philadelphia: 15 March 1886), 110.
[11] The son of Benjamin and Anna Gerhard, Lieut. William Gerhard (1847-1914) was married to Sally Lyle, a union that produced one son: Arthur Howell Gerhard (1877-1949). Source: Ancestry.com. *U.S., Find A Grave Index, 1600s-Current* [database on-line]. Provo, UT, USA: Ancestry.com Operations, Inc., 2012. The partnership was official by 1905, as referenced in *The Philadelphia Inquirer*, 21 May 1905, 2.
[12] *The Iron Age Manufacture's Index*. (New York: 1897), 14, 27, & 130.; *The Iron Age Manufacture's Index*. (New York: 1911), 37, 81-85, & 403.

Richmond Street. The subject building was largely constructed during this period of the company's history, between 1905 and 1910.[13]

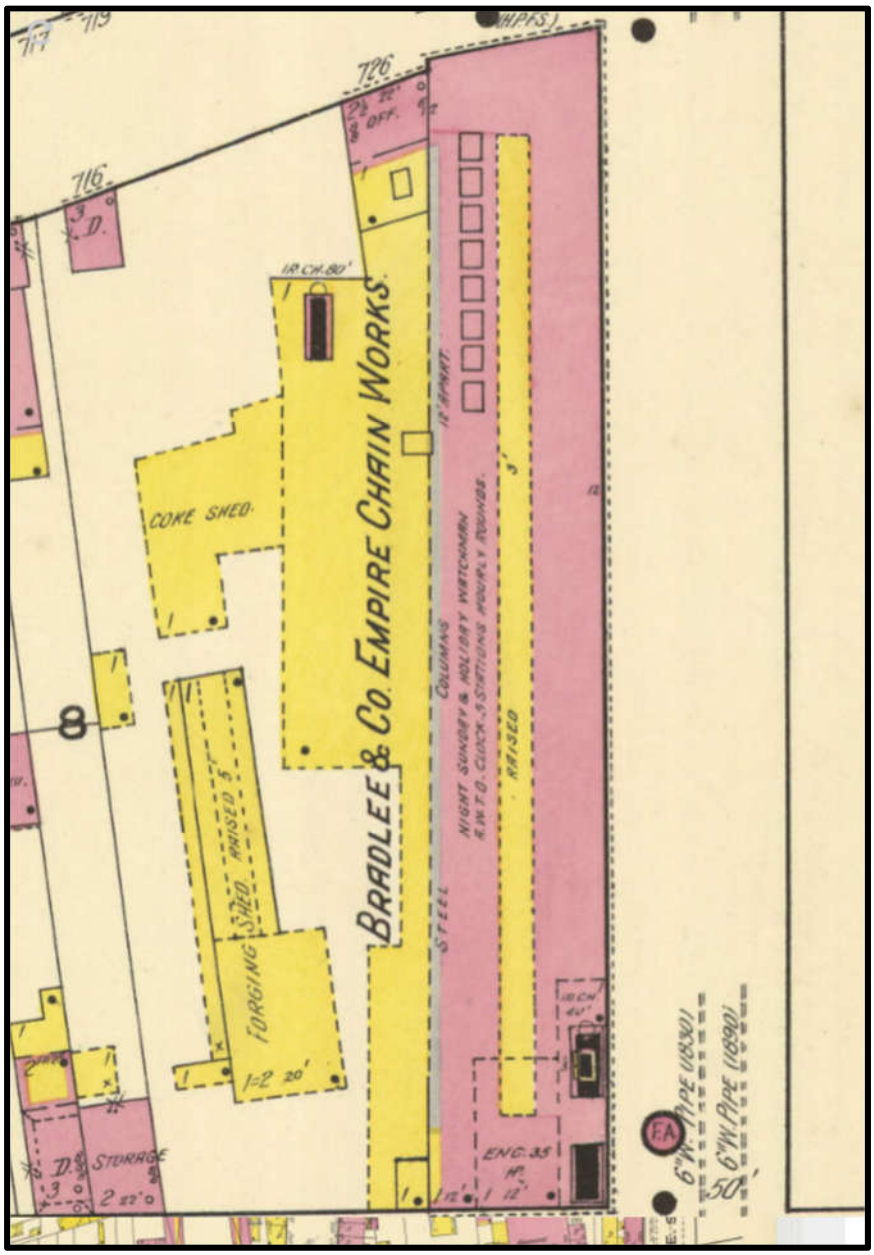


Figure 17. The 1922 Atlas of the City of Philadelphia, published by G.W. & Walter S. Bromley. Source: Greater Philadelphia GeoHistory Network.

Around the time the subject property was built as a modern enlargement to the manufactory, the company was internationally known as a manufacturer of iron chains with similarly placed firms around the world, including the Borsig Co. in Austria-Hungary, Germany, and Russia; the "Establishment of Alfred Maguin" at Charmes pre La Fere; and the firm of John Brown in

[13] The subject building was not present and/or only partly extant in the 1905 Atlas of the City of Philadelphia but was entirely built by the 1910 Atlas of the City of Philadelphia.

England.[14] In various trade journals and other reference materials, the company was compared to other firms on a national level for being the premier testers of anchors and chains: American Steel Casting Co. (anchors only), Chester, Pennsylvania; Baldt Anchor Co. (anchors only), Chester, Pennsylvania; Bradlee & Co., Philadelphia, Pennsylvania; Cape Ann Anchor Works, Gloucester, Massachusetts; J.B. Carr Co., Troy, New York; Columbus Chain Co., Columbus, Ohio; Frankford Chain Works, Philadelphia, Pennsylvania; Hayden-Corbetz & Co., Columbus, Ohio; Lebanon Chain Works, Lebanon, Pennsylvania; The Logan Iron and Steel Co., Burnham, Pennsylvania; J. McKay & Co.'s Iron City Chain Works, McKees Rocks, near Pittsburg, Pennsylvania; Monongahela Iron and Steel Co., Pittsburg, Pennsylvania; The Seaboard Steel Castings Co., Chester, Pennsylvania (anchors only); Seneca Chain Co., Kent, Ohio; West End Rolling Mills, Lebanon, Pennsylvania; Whitehall, Chain Works, Whitehill, Fieldsboro, New Jersey; and Woodhouse Chain Works, Trenton, New Jersey.[15] The firm was still considered a leader in the chain business, as referenced in a *Handbook* on ship calculations, construction and operation published in 1917, They also advertised in publications like *The Iron Age* and *The Marine Journal* from the early 1900s through the 1920s.[16]

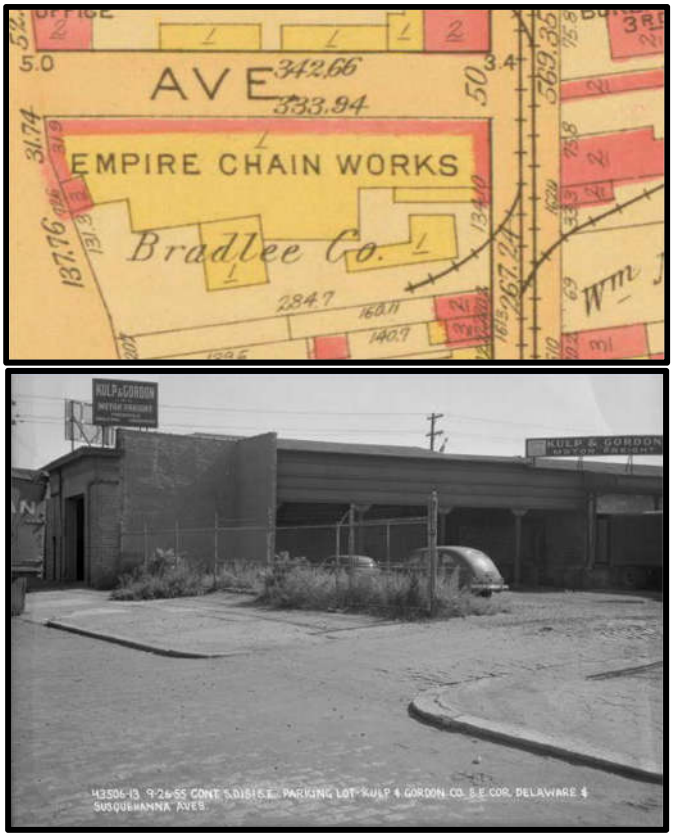
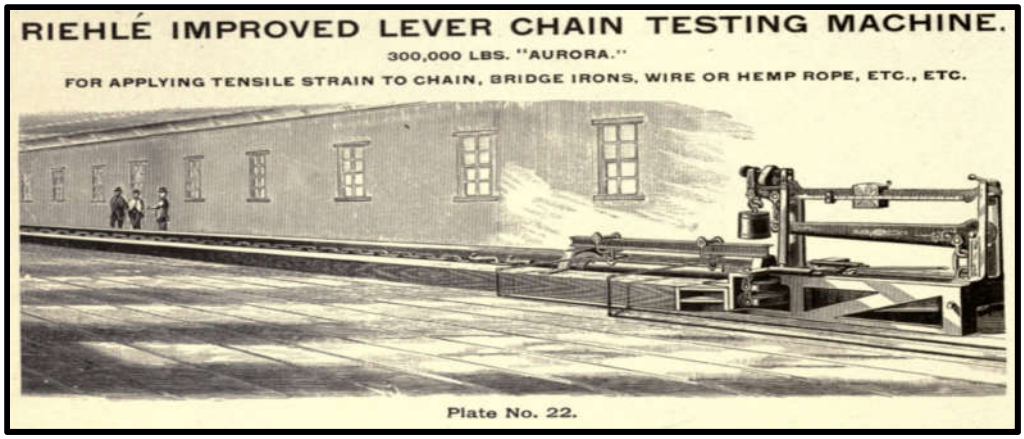


Figure 18. Left: The 1922 Atlas of the City of Philadelphia, published by G.W. & Walter S. Bromley. Source: Greater Philadelphia GeoHistory Network. Figure 19. Right: The southwest elevation and yard of the former Empire Chain Works in 1955.

[14] *Jahrbuch der Schiffbautechnischen Gesellschaft*. (Berlin: Zehnter Band, 1909), 162.
[15] *Lloyd's Register of Shipping*. (London: 1906-07), 240.
[16] Hughes, Charles Haynes. *Handbook of Ship Calculations, Construction and Operation; A Book of Reference for Shipowners, Ship Officers, Ship and Engine Draughtsmen, Marine Engineers, and Others Engaged in the Building and Operating of Ships*. (New York: D. Appleton, 1917), 655-56.



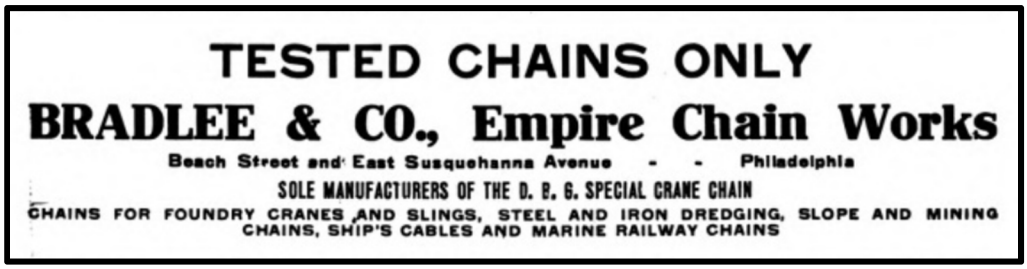


Figure 20. Top: Advertisement for "Riehle Improved Lever Chain Testing Machine," "for applying tensile strain, bridge irons, wire or hemp rope, etc. etc.," as published in *Riehle Bros. Testing Machine Co.'s Catalogue No. 3*. in 1897. Source: *Catalogue No. 3*. (Philadelphia: Riehle Bros. Testing Machine Co., 1897), 40. Figure 21. Center: Advertisement for Bradlee & Co.'s Empire Chain Works, then the "sole manufacturers of the D.B.G. Special Crane Chain," etc. in 1909. Source: *The Iron Age*, December 1909, 92. Figure 22. Bottom: Advertisement for Bradlee & Co., then at 726 Richmond Street, producers of "Ships' Cables – Marine Railway Chains – Steering and Sling Chains." Source: *The Marine Journal*, 8 July 1922, 27.

CRITERIA C & J

The former Bradlee & Co.'s Empire Chain Works building is an historic manufacturing shed building that represents an architectural style and type that once characterized the industrial built environment of Philadelphia. Specifically, low-slung industrial buildings of masonry construction, designed for specific manufacturing purposes, were once commonplace in Fishtown and throughout the River Wards, Philadelphia, and the larger region, despite being a

vanishing building type in the twenty-first century. As the increased specificity of machinery expanded in every field of industry, industrial facilities continued to be purpose-built and/or retrofitted to house machinery. In turn, industrial design and building construction evolved greatly in the nineteenth century to accommodate mechanization. In the mid-to-late nineteenth century, new manufacturing facilities of all sizes, including small shed buildings similar to the subject property, adopted a design and construction method referred to as "pilaster or pier construction [pilaster construction]."[17] The pilaster construction method called for the employment of brick piers between each bay that contained an opening, which provided structural strength and greater door or window area. The pilasters created facades of recessed bays that required corbeled cornices within each bay. The unification of these characteristics created rhythmic, undulating masonry facades that culminated in a distinctive industrial or utilitarian aesthetic in buildings and structures that would otherwise be entirely mundane.

Like many other one-story industrial buildings of the period, the northwest and northeast elevations of the subject property feature facades that are distinctively articulated by the employment of brick pilasters and corbeled cornices which delineate numerous bays that once accommodated specific openings. The brick pilasters, and corbeled cornices were employed in the subject building as part of a larger trend of industrial architecture that came with the advent of heavy machinery and overall mechanization. The pilaster construction method ultimately enhanced "the visual impact of expanses of factory walls," being heightened by the use of distinctive brickwork. The extension of Bradlee & Co.'s Empire Chain Works, and the creation of this building between 1905 and 1910 came at a time when "testing chain" had become a standard of the industry, requiring shops and production sheds to be linear to accommodate specific machinery, such as "Riehle's Improved Lever Chain Testing Machine" (Figure 17).[18] The subject building and many others like it were part of an architectural style and type in a period wherein architects, builders, engineers, and/or factory owners employed brickwork to obtain structural requirements, "the intrinsic characteristics" of which created a utilitarian aesthetic for industrial buildings.[19]

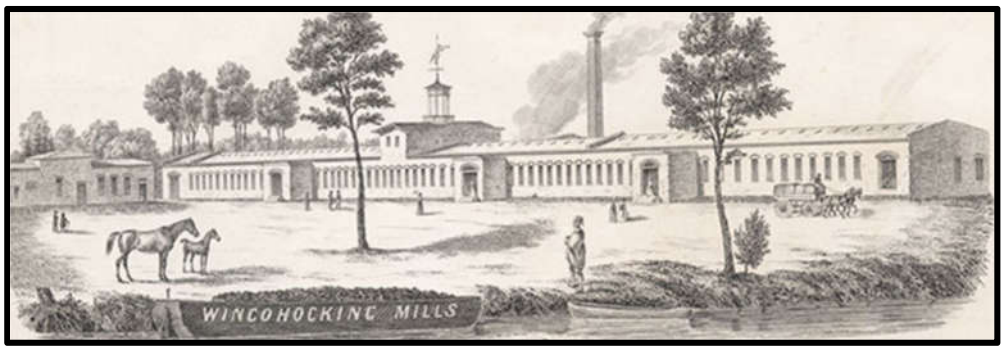
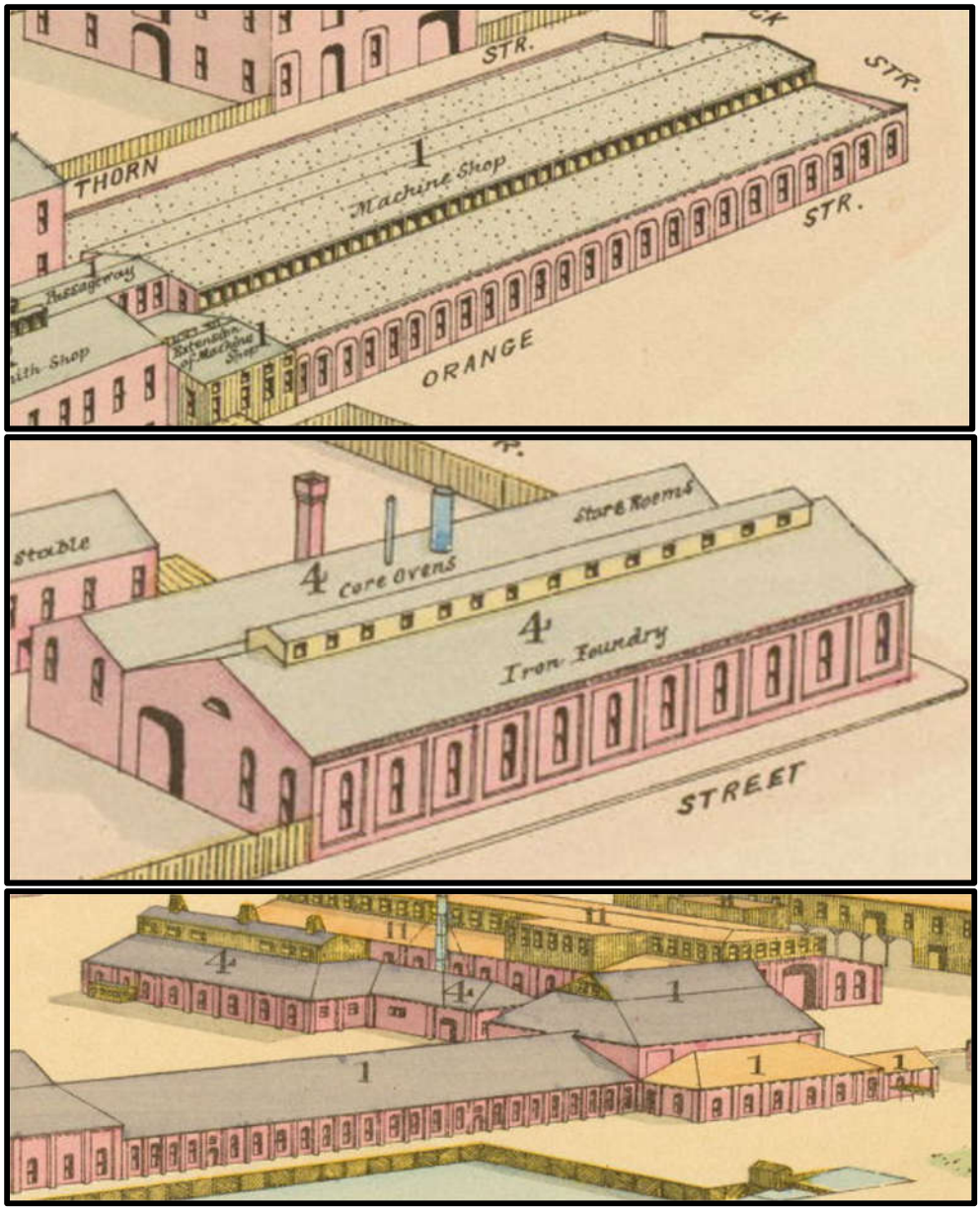


Figure 23 (above) and Figure 24. Composed largely of low, one-story production sheds, Garsed's Wingohocking Mills at Frankford are early examples of the one-story building in the industrial landscape. Source: Castner Scrapbooks, V. 26., Free Library of Philadelphia.

[17] Gordon, Robert B. and Malone, Patrick M. The Texture of Industry: An Archaeological View of the Industrialization of North America. (Oxford University Press, 1997), 32.
[18] *Riehle Bros. Testing Machine Co.'s Catalogue No. 3*. in 1897. Source: *Catalogue No. 3*. (Philadelphia: Riehle Bros. Testing Machine Co., 1897), 40.
[19] Bradley, Betsy Hunter. *The Works: The Industrial Architecture of the United States*. (New York: Oxford University Press, 1999), 232-234.



Production sheds and machine shops built using the pilaster construction method. Top: Illustrated in 1877, the Machine Shop of J. Morton Poole & Co., Machine Works, at Dock Street between Thorn and Orange in Wilmington, Delaware, showing the use of pilaster construction through the appearance of the side walls of the one-story shed. Source: Plate 1157, Hexamer General Surveys, Volume 13, Free Library of Philadelphia. Middle: Illustrated in 1877, the Iron Foundry of Robert Wetherill's Engine and Machine Works is, like the subject property, a low, one-story building with distinctive bays at the side elevation, created by brick piers and what appear to be corbeled cornices, features of the pilaster construction method. Source: Plate 1126, Hexamer General Surveys, Volume 12, Free Library of Philadelphia. Bottom: Illustrated in 1890, the River Iron Works of John H. Dialogue in Camden, New Jersey featured numerous low buildings built upon similar architectural lines as the subject property. The low-slung components of the buildings labeled one ("1") feature pilasters that place each opening within its own bay. Source: Hexamer General Surveys, Volume 12, Free Library of Philadelphia.

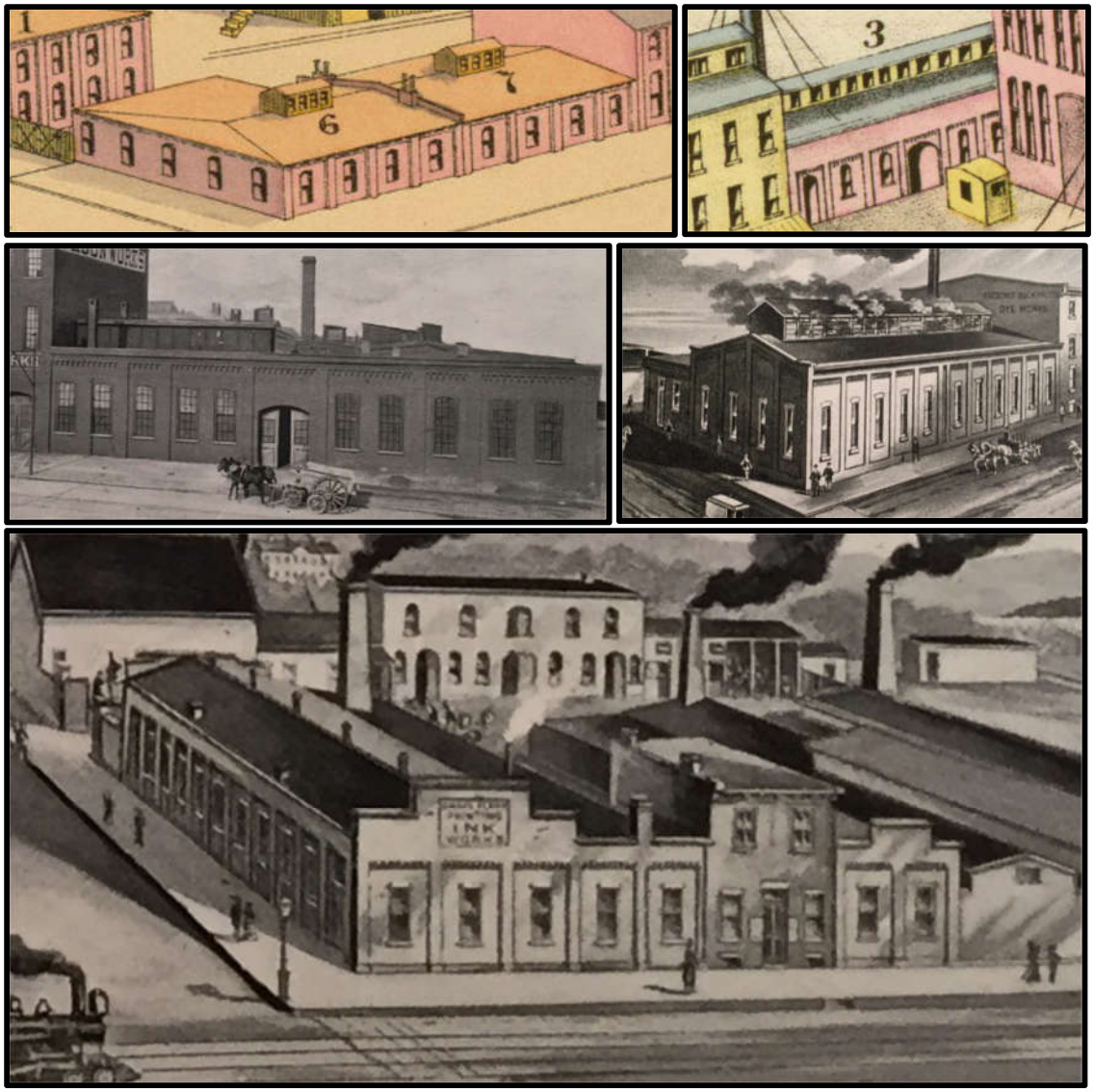


Figure 25. Top left: Illustrated in 1892, this image shows a one-story brick industrial shops/sheds of Hughes and Paterson's at Richmond and Balls Streets in Fishtown. These buildings appear to be of the pilaster construction method like the subject property. Source: Hexamer General Surveys, Greater Philadelphia GeoHistory Network. Top right: Illustrated in 1890, this image shows the one-story component of a machine shop in South Philadelphia. This building component is constructed of what appears to be the pilaster method, no doubt employed to support the machinery. Source: Hexamer General Surveys, Greater Philadelphia GeoHistory Network. Middle left: The one-story component of the Kessler Wagon Works at E. Girard Avenue and Norris Street in Fishtown, being buildings that appear to be constructed of the pilaster construction method. Source: Engelhardt, George Washington, *Philadelphia Pennsylvania, The Book of Its Bourse & Co-operating Bodies*. (Philadelphia: Lippincott Press, 1898-99). Bottom right: Frederick Buckhalter's Dye Works at Front and Clearfield Streets, established in 1883, appearing to be built using the pilaster construction method. Source: Engelhardt, George Washington, *Philadelphia Pennsylvania, The Book of Its Bourse & Co-operating Bodies*. (Philadelphia: Lippincott Press, 1898-99). Bottom: C.E. Robinson & Bro., Gray's Ferry Printing Ink Works, which has at least two buildings constructed of the pilaster method. Source: Engelhardt, George Washington, *Philadelphia Pennsylvania, The Book of Its Bourse & Co-operating Bodies*. (Philadelphia: Lippincott Press, 1898-99).

8. BIBLIOGRAPHY

This nomination was completed by the Keeping Society of Philadelphia with Oscar Beisert, Architectural Historian and Historic Preservationist, as the primary author with assistance from Kelly E. Wiles, Architectural Historian, and J.M. Duffin, Archivist and Historian. The following sites were used to create the nomination: Google Books, Greater Philadelphia GeoHistory Network, Newspapers.com, and Proquest Historical Newspapers.

Major Bibliographic References

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

Catalogue No. 3. (Philadelphia: Riehle Bros. Testing Machine Co.), 1897.

Gordon, Robert B. and Malone, Patrick M. *The Texture of Industry: An Archaeological View of the Industrialization of North America*. (Oxford University Press), 1997.

Hughes, Charles Haynes. *Handbook of Ship Calculations, Construction and Operation; A Book of Reference for Shipowners, Ship Officers, Ship and Engine Draughtsmen, Marine Engineers, and Others Engaged in the Building and Operating of Ships.* (New York: D. Appleton), 1917.

Jahrbuch der Schiffbautechnischen Gesellschaft. (Berlin: Zehnter Band), 1909.

"Kensington Improvements," *Philadelphia Builders' Guide*. (Philadelphia: 15 March 1886), 110.

Lloyd's Register of Shipping. (London: 1906-07), 240.

Sayenga, Donald. "Modern History of Wire Rope," www.atlantic-cable.com. Accessed 20 August 2019.

Second Report of the Secretary of Harvard College Class of 1871. (Boston: Alfred Mudge & Son), June 1874.

Sterling's Marine Catalog. (New York: Sterling Cooper Corp.), 1922.

U.S., Find A Grave Index, 1600s-Current [database on-line]. Provo, UT, USA: Ancestry.com Operations, Inc., 2012.

The Iron Age Manufacture's Index. (New York: 1897), 14, 27, & 130.

The Iron Age Manufacture's Index. (New York: 1911), 37, 81-85, & 403.

"Trade Jottings.," The Philadelphia Inquirer. (Philadelphia: 16 April 1881), 2.