

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 General Stores and Mold Loft Building, Harriman Yard of the Merchant Shipbuilding Corporation

other names/site number Manhattan Soap Company Warehouse

2. Location

street & number 1414 Radcliffe Street not for publication N/A
city or town Bristol Borough vicinity N/A
state Pennsylvania code PA county Philadelphia code 101 zip code 19007

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 X nationally statewide locally. (See continuation sheet for additional comments.)

Jean H. Cutler June 16, 2003
Signature of certifying official Date
PA 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

hereby certify that this property is:	Signature of Keeper	Date of Action
<u> </u> entered in the National Register <u> </u> See continuation sheet.	_____	_____
<u> </u> determined eligible for the National Register <u> </u> See continuation sheet.	_____	_____
<u> </u> determined not eligible for the National Register	_____	_____
<u> </u> removed from the National Register	_____	_____
<u> </u> other (explain): _____ _____ _____		

5. Classification

Ownership of Property

(Check as many boxes as apply)

- private
- public-local
- public-State
- public-Federal

Category of Property

(Check only one box)

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

Number of Resources within Property

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

Contributing	Noncontributing
<u>1</u>	<input type="checkbox"/> buildings
<u>0</u>	<input type="checkbox"/> sites
<u>0</u>	<input type="checkbox"/> structures
<u>0</u>	<input type="checkbox"/> objects
<u>1</u>	<input type="checkbox"/> 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

0

6. Function or Use

Historic Functions

(Enter categories from instructions)

INDUSTRY/PROCESSING/EXTRACTION /

manufacturing facility

Current Functions

(Enter categories from instructions)

VACANT/NOT IN USE

7. Description

Architectural Classification

(Enter categories from instructions)

No Style

Materials

(Enter categories from instructions)

foundation concrete

walls concrete

brick

roof synthetic

other _____

Narrative Description

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

8. Statement of Significance

Applicable National Register Criteria

(Mark "X" in one or more boxes for the criteria qualifying the property for National Register listing)

- A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B Property is associated with the lives of persons significant in our past.
- C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations

(Mark "X" in all the boxes that apply.)

- 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)

MARITIME HISTORY

INDUSTRY

ARCHITECTURE

Period of Significance

1917 - 1925

Significant Dates

1917

Significant Person

(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

N/A

Architect/Builder

Fred T. Ley & Company

Narrative Statement of Significance

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

9. Major Bibliographical References

Bibliography

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

See continuation Sheet.

Previous documentation on 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 repositories: 1) Grundy Memorial Library
2) Free Library of Philadelphia

10. Geographical Data

Acreage of Property 1.8 acres

UTM References

(Place additional UTM references on a continuation sheet)

1 <u>18</u> Zone	<u>487160</u> Easting	<u>4425300</u> Northing	2 _____ Zone	_____ Easting	_____ Northing
3 _____ Zone	_____ Easting	_____ Northing	4 _____ Zone	_____ Easting	_____ Northing

See continuation sheet.

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

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

11. Form Prepared By

name/title Cynthia Rose Hamilton

organization Powers & Company, Inc. date June 26, 2002 (revised June 11, 2003)

street & number 211 N. 13th Street, 5th Floor telephone 215-636-0192

city or town Philadelphia state PA zip code 19107

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

- A USGS map (7.5 or 15 minute series) indicating the property's location.
- A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black and white photographs of the property.

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

Property Owner

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

name _____

street & number _____ telephone _____

city or town _____ state _____ zip code _____

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

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

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General Stores and Mold Loft Building, Harriman Yard of the Merchant Shipbuilding Corporation
Bucks County, PA

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The General Stores and Mold Loft Building, constructed in 1917, is a three-story, reinforced concrete building with a rectangular footprint and a flat roof and is located on the site of the former Harriman Yard of the Merchant Shipbuilding Corporation. The building is situated on the western edge of an 11-½ acre parcel of land, on the east side of Radcliffe Street in Bristol Borough, on the site of the former Harriman Yard of the Merchant Shipbuilding Corporation. A narrow strip of grass separates the west elevation from the sidewalk along Radcliffe Street; a paved parking lot exists to the south; and an expanse of vacant land continues to the north and to the east, extending to the banks of the Delaware River. Portions of the surrounding vacant land have been paved, while other areas remain unpaved. A new housing development was recently completed on a separate parcel immediately to the north. The General Stores and Mold Loft Building retains its character-defining features including exposed reinforced concrete framework, brick spandrels, industrial steel windows, and free-standing interior concrete columns, and is a representative example of early twentieth century warehouse architecture, and thus retains architectural integrity.

The building is utilitarian in design, typical of early twentieth century warehouse construction. Each elevation contains exposed reinforced concrete structural framework with large window bays above brick spandrels. There is no applied ornamentation. The presence of the main entrance on the south elevation distinguishes it as the primary façade. The building is organized into ten bays on the main façade and spans fifteen bays along Radcliffe Street.

Access to the interior is provided by six pedestrian entrances and seven loading bays. On the south elevation, the main entrance contains a one-story gable fronted frame entrance pavilion sheltering a double-leaf c. 1985 aluminum glazed door, which is set within a stuccoed projection. Concrete steps and a concrete ramp with metal rails lead to the main entrance. A secondary entrance with a double-leaf door accessed by concrete steps is located to the east of the main entrance. Near the east end of the south elevation, a one-story shed roof projection shelters another entrance with a c. 1985 double-leaf flush steel door. An entrance also exists on the north elevation and contains a single-leaf c. 1985 flush metal door. The east elevation is served by numerous entrances including a single-leaf metal door and a double-leaf metal door at the northern end, and seven loading bays with metal roll-down doors. A concrete loading platform with shed roof shelters the loading bays. The seven loading bays are set within a one-story projecting section of concrete block construction.

Fenestration is provided throughout all elevations by original 20-light industrial steel windows with six-light centered operable units. The sash are grouped in three per bay. At the third story, the brick spandrels are narrow and the bays contain stacked 20-light units. The majority of the bays retain their original steel windows, however, in most instances, the steel windows were covered with T-111 siding and small 1/1 aluminum units were installed within the original steel units sometime around 1985. At some locations, the window bays were infilled with concrete block that has been painted. Sections of the steel muntins were removed to

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accommodate the 1/1 sash. At the third story, a row of clerestory windows runs north-south. These sash are steel 10-light units divided by thin steel mullions.

A cornice with exposed rafter tails crowns the building on all elevations. The roof is essentially flat with a gentle slope away from the centered clerestory that runs north-south.

The interior is generally utilitarian in character with vast open floor plans typical of early twentieth century warehouse construction. On the first and second floors, the open floor space is interrupted only by regularly spaced painted concrete columns. There are no interior partitions. Each column is round, topped by a funnel-shaped capital. A square plinth separates the column from the ceiling. The floors and the ceiling are concrete. The walls are painted brick with drywall installed within the original window bays, obscuring the original steel windows. The drywall was installed c. 1985 with the covering over of the original steel sash.

The third floor differs from the lower floors in several respects. An abundance of natural light was required for the original use that occurred on the third floor and thus the windows were stacked in two rows and a clerestory was provided. The third floor is largely uninterrupted as a result of an exposed steel roof truss system that requires only a minimal number of steel columns. As on the lower floors, the third floor contains a concrete floor and the walls are painted brick with drywall infilling the original window bays that was installed c. 1985 as part of the window alterations.

Access from floor to floor is provided by two stairs and two freight elevators. The stairs are centered on the north and south elevations. At the second floor, the stairs are located within concrete towers. Both stairs feature concrete treads and risers with simple metal pipe handrails. Sliding steel fire doors are located at either end of the stair tower on the second floor. The freight elevators are located in freestanding painted brick shafts. As evident in the photographs, utilitarian style steel gates serve as doors.

The building remained in near continuous operation until it was vacated in 2000. Changes to the building over time have been minimal. Sometime around 1930, a conveyor was constructed which connected this building to a nearby building. Historic maps show this conveyor entering the building at the southwest corner. There is no physical evidence of that change on the building's façade. Around 1985 the original steel windows were covered over and the new 1/1 units were installed. There have been virtually no other changes to the building. The building retains its original industrial character and features and thus retains integrity.

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Situated on the east side of Radcliffe Street in Bristol Borough, Bucks County, Pennsylvania, the General Stores and Mold Loft Building was one of the first buildings commissioned by the Emergency Fleet Corporation for construction at the Harriman Yard of the Merchant Shipbuilding Corporation. Harriman Yard was one of only three prefabricated shipbuilding facilities in the nation established for the manufacture of transport ships during World War I. The General Stores and Mold Loft Building is the last major vestige remaining from the shipyard. The building meets National Register Criterion A in the areas of Maritime History and Industry for its association with World War I shipbuilding. It meets Criterion C in the area of Architecture as a good example of an early 20th century reinforced concrete building and the work of Fred T. Ley & Company. The period of significance begins in 1917 with the construction of the building and ends in 1925 when Manhattan Soap Company acquired the building and used it as a storage facility.

SUMMARY HISTORY

Bristol Borough, located on the Delaware River, approximately twenty miles upriver from Philadelphia, was Bucks County's first county-seat and was its earliest seaport.¹ Radcliffe Street, a primary thoroughfare that parallels the Delaware River through Bristol Borough, is one of the earliest roads in the county, predating European settlement. Historically, shipbuilding was among the prominent industries of Bristol Borough, dating from the early 19th century with the establishment of the first shipyards in Bristol, just south of the Harriman Yard.² The adequate depth of the Delaware River in this vicinity, coupled with the tradition of shipbuilding in Bristol, made this site a leading candidate for the Emergency Fleet Corporation to establish a World War I shipyard.

The late entry of the United States into World War I necessitated the expedient production of naval resources, including both battleships and transport ships. The US Shipping Board, established by the Shipping Act of 1916 and formally organized in January 1917, was charged with the responsibility for regulating carriers by water and with establishing a naval auxiliary and merchant marine.³ On April 16, 1917, the US Shipping Board created the Emergency Fleet Corporation in order to provide for the procurement, construction and disposal of merchant vessels. The Emergency Fleet Corporation retained the Merchant Shipbuilding Corporation, a private ship manufacturer, to build a shipyard in Bristol, which became known as Harriman

¹ Bristol was originally known as Buckingham. W.W.H. Davis, *A Genealogical and Personal History of Bucks County, Pennsylvania*, Edited by Warren S. Ely and John W. Jordan, (New York: Lewis Pub. Co., 1905), 127.

² Jones' Ship Yard was located at the junction of the Delaware River and Adams Hollow Creek. Doron Green, *A History of Bristol Borough in the County of Bucks, State of Pennsylvania Anciently Known as "Buckingham" Being the Third Oldest Town and Second Chartered Borough in Pennsylvania From Its Earliest Times to the Present Year 1911*, (Camden, NJ: C.S. Magrath, 1911), 133.

³ Information on the US Shipping Board and the Emergency Fleet Corporation included in National Archives Photograph Collection, "Progress and Completion Photographs of Housing Projects," Scope and Content of Collection.

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Yard. Upon completion, Harriman Yard was comprised of approximately thirty buildings. The General Stores and Mold Loft Building, which is the subject of this nomination, was one of the first buildings to be completed at the shipyard as it served a key function in the ship building operation.

Immediately to the west of the shipyard, a residential community was created for the Harriman Yard workers known as "Harriman Village." The village was composed of small one and two story houses and dormitories, and in addition, the community featured its own fire department, theatre, retail stores, hotel, police station, and hospital.⁴

Following the close of World War I, Harriman Yard was sold off to various owners. Some of the buildings were demolished and some were adapted for other uses.

Around 1925, the Manhattan Soap Company of New York City acquired three Harriman Yard buildings for the manufacture of soap. The three buildings had formerly housed the shipwright shop, the original paint shop, and the General Stores and Mold Loft Building. The one-story shipwright shop became the main manufacturing building for the soap plant and the one-story paint shop was used for coal storage. The three-story General Stores and Mold Loft Building served as Manhattan Soap's warehouse throughout the soap company's occupation.⁵ Between 1927 and 1950, Manhattan Soap added three additional buildings: a two-story silicate building, a one-story kettle house and power house, and a one-story boiler house. Also during that period, a conveyer was added linking the kettle house to the southeast corner of the warehouse (former mold loft). That conveyer was removed sometime after 1961.⁶

In 1956, Manhattan Soap was sold to Purex Corp., which then became a subsidiary of Dial Soap in 1985. Purex continued to refer to the Bristol operation as the "Manhattan Division." At some point after Purex acquired the property, five of the Bristol buildings were demolished, leaving only the warehouse (the subject of this nomination). During the Purex/Dial Soap occupation, a modern tower/packaging building and a batch building were constructed. In June 2000, Dial Soap announced that it would close the Bristol plant, which was, at that time, comprised of three buildings.⁷ Shortly after the facility's closure, the two modern buildings were demolished, leaving the warehouse as the only surviving building on the site.

In the 1990s, the former Harriman Shipyard was acquired by the Redevelopment Authority of Bucks County and was declared a brownfields site. Extensive demolition of the former shipyard

⁴ Much of Harriman Village survives and has been listed as an historic district in the National Register of Historic Places.

⁵ Sanborn maps document the use of the buildings over the years. Sanborn Map Company, New York, Sanborn Maps for the years 1919, 1927, 1951, 1961.

⁶ The conveyer appears on the most recent Sanborn map, which was published in 1961.

⁷ "Dial Corp. Announces Closing of Bucks Plant One Hundred Jobs Will be Eliminated," *The Philadelphia Inquirer*, June 29, 2000.

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buildings was undertaken with the only two surviving shipyard buildings being the General Stores and Mold Loft Building and a small Paint Shop located in the southeast corner of the yard, approximately 500' southwest from the Mold Loft Building (this is not the original paint shop, but a second paint shop that was constructed in late 1918 or early 1919).⁸

The current owner acquired the General Stores and Mold Loft Building in anticipation of an upcoming rehabilitation.

SIGNIFICANCE IN MARITIME HISTORY AND INDUSTRY

The General Stores and Mold Loft Building is significant in the areas of Maritime History and Industry as one of the last remaining vestiges of World War I pre-fabricated ship construction in the nation. Construction of Harriman Yard, undertaken under the auspices of the Emergency Fleet Corporation, was begun in mid-1917. The General Stores and Mold Loft Building was one of the first buildings to be constructed, as its function was integral to the shipyard's operation. This building stands as the last major building remaining from Harriman Yard.

Lofting System of Shipbuilding

Prior to the development of the lofting system at the turn of the 20th century, ships were constructed like houses, with each piece fitted to the ship as it stood on the shipway. As the construction of ships changed from wood to iron and finally to steel, it became necessary to introduce some system whereby the work of preparing the hull materials could be undertaken independent of the ship, thereby expediting the construction process.⁹ Workers in the mold loft, known as loftsmen, were highly skilled and lofting was regarded as a highly-trained profession.

In 1918, an important work in the shipbuilding industry was published, *The Practical Loftsmen*.¹⁰ As reported in that publication, most shipbuilding yards at that time had mold lofts, which were integral to the process of shipbuilding.¹¹ Mold lofts were large open buildings with smooth floors of sufficient size so that the plans of a ship hull could be laid out in full scale.¹² Small scale blueprints of the hull were prepared by draftsmen and were brought to the mold loft, where the

⁸ The original paint shop was located adjacent to the General Stores and Mold Loft Building and it was that building that was acquired and utilized by Manhattan Soap. The second paint shop was probably constructed in late 1918 or early 1919 as it is not shown in the original utility plan for the shipyard dated June 29, 1918, but does appear on the 1920 Sanborn. The survey for the 1920 Sanborn was undertaken in December 1919. The utility plan for the Shipyard was published in, Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 142-143.

⁹ G.A. Bisset and Whitford Drake, *The Practical Loftsmen*, Compiled in the Hull Division, Navy Yard, Puget Sound Washington, May 1918.

¹⁰ Hull Division, Navy Yard, Puget Sound Washington, *The Practical Loftsmen*, May 1918.

¹¹ Hull Division, Navy Yard, Puget Sound Washington, *The Practical Loftsmen*, May 1918, 5.

¹² "More than Thirty Trades Included in Shipbuilding," *Emergency Fleet News*, Vol. 1, No. 28, September 12, 1918.

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lines of the ship (indicating the steel plates that make up the hull) were precisely drawn on the building's floor by the loftsmen. Full-size templates or molds were made in light wood or paper for each section of the hull using the floor lines as guides. The wood or paper templates were then brought to the steel fabrication shop where the actual hull plates were manufactured.¹³ Extreme precision was required in both drawing the lines on the floor and in cutting the templates so that the final steel plates would exactly fit on the ship in the correct place.¹⁴

Emergency Fleet Corporation's Prefabricated Shipyards

When the United States declared war against Germany, a great need arose for ships to quickly move supplies to Europe, past the German submarine fleet. The United States Shipping Board formed the Emergency Fleet Corporation to assume the charge of building the needed ships. A range of tasks was assigned to the Emergency Fleet Corporation including: expanding existing shipyards, establishing new shipyards, inspecting the ships to be built under its sponsorship, managing housing problems associated with the new and expanded shipyards, and supervising the operation of shipyards.¹⁵

Recognizing the inadequacy of the existing shipyards for the rapid construction of large freighters, the Emergency Fleet Corporation sought innovative production methods to facilitate the mass production of standardized steel cargo vessels.¹⁶ The solution came with a new plan: the ships would be *prefabricated*, with the structural components and machinery pre-manufactured at remote facilities and transported to the new shipyards for assembly.¹⁷ This system of shipbuilding had been established in the early 20th century on a small scale. There were a number of advantages in this innovative system, most importantly, that the construction could be accomplished by relatively inexperienced workers who were responsible for mastering a limited number of tasks. Contemporary shipyards of the period typically employed highly skilled craftsmen who built vessels using traditional shipbuilding methods, a comparatively much more time consuming and costly process.

The Emergency Fleet Corporation selected three locations in the nation for the construction of the prefabricated shipyards: Philadelphia, Newark and Bristol. To carry out the new plan, the Emergency Fleet Corporation retained three successful private shipbuilding companies to

¹³ "P.N.Y. Builds a Battleship," http://www.usswashington.com/pnybuild/pny_17.htm.

¹⁴ G.A. Bisset and Whitford Drake, *The Practical Loftsmen*, Compiled in the Hull Division, Navy Yard, Puget Sound Washington, May 1918.

¹⁵ As detailed in one of the most complete sources on the Bristol shipyard, Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 140.

¹⁶ Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 140.

¹⁷ This innovative method of ship construction could be undertaken by relatively inexperienced workers. Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 140.

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design the new shipyards, assist in the set-up of operations, and staff the shipyards upon completion. The three prefabricated shipyards that the Emergency Fleet Corporation established were: the American International Shipbuilding Corporation's "Hog Island Yard," located on the Delaware River at the site of the present-day Philadelphia International Airport in Southwest Philadelphia; the Submarine Boat Corporation's "Newark Bay Shipyard," located at the site of the present-day marine terminals near Newark International Airport in Newark, New Jersey; and the Merchant Shipbuilding Corporation's "Harriman Yard," located on the Delaware River in Bristol, Pennsylvania.¹⁸ Of the three facilities, Harriman Yard was the smallest with twelve shipways in comparison with Newark Bay's twenty-eight shipways and Hog Island's fifty shipways.¹⁹ There are presently no buildings remaining at either the Newark Bay or Hog Island yards.²⁰

Each of the three pre-fabricated shipbuilding facilities gained recognition in individual areas. Hog Island was renowned for its great size and capacity; Newark Bay was recognized for its victory in the race for launching the first vessel; Harriman Yard, despite being the smallest of the three yards, manufactured the largest ships with the greatest cargo capacity in comparison with those built at Newark or Hog Island.²¹

Establishment of Harriman Yard

Bristol was a likely site for the establishment of a prefabricated shipyard due to several factors: the availability of a large tract of land, the adequate water depth at this location, and the proximity of the site to existing freight transportation lines that allowed for the delivery of materials directly to the site.²²

Harriman Yard was constructed as a public-private partnership. On September 7, 1917, five months after the United States entered into the "Great War," the Merchant Shipbuilding Corporation signed a \$68.6 million contract with the Emergency Fleet Corporation for the construction of forty standard prefabricated steel cargo carriers.²³ Two months after the forty-ship agreement was made, another twenty prefabricated ships were ordered.²⁴

¹⁸ Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 140.

¹⁹ Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 140.

²⁰ According to author Michael Bernstein there are no buildings at Newark Bay or Hog Island. The surviving paint shop is the second paint shop constructed at Harriman. Telephone Interview with Michael Bernstein, May 29, 2002.

²¹ Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 140.

²² C. Stanley Taylor, "Bristol, Pennsylvania, America's Greatest Single Industrial Housing Development," *American Architect*, vol. 113, no. 2212 (May 15, 1918): 599-615.

²³ "Harriman, a Triumph of Patriotism," *The Advance of Bucks County*, October 20, 1983, 3.

²⁴ Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 143.

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The Merchant Shipbuilding Corporation, with offices in New York and Philadelphia, was a private company operating a successful traditional shipbuilding facility in Chester, Pennsylvania. At the Bristol facility, Merchant Shipbuilding Corporation was charged with purchasing the land and building the ships under government contract; the federal government paid \$15,500,000 for the construction and retrofitting of buildings.²⁵ In June 1917, the Merchant Shipbuilding Corporation purchased an 80-acre tract of waterfront land with approximately 4,900 feet of river frontage that extended inland about 1,500 feet.²⁶ This purchase was followed by the acquisition of an additional 180 acres located west of Radcliffe Street, for storage yards and a residential development that became known as the Town of Harriman.²⁷ Construction at Harriman Yard commenced in September 1917 and the plant was largely completed in February 1918.²⁸

The shipyard was built under the supervision of Robert E. Kline, plant engineer of the Emergency Fleet Corporation, and under the direction of W.H. Mason, superintendent of construction of the Merchants Shipbuilding Corporation.²⁹ Contractor Fred T. Ley & Company, Inc. of New York and Springfield, Massachusetts was retained to construct the new buildings in the shipyard.³⁰

The Harriman plant was divided into four yards: Yards Nos. 1 and 4 contained the storage yards for pre-fabricated and unfinished materials; Yard No. 2 contained the shipways; Yard No. 3 contained the shops and service buildings. The General Stores and Mold Loft Building was located in Yard No. 3. Prefabricated structural components and machinery from outside shops were brought by Pennsylvania Railroad spurs to the main storage yards (Nos. 1 and 4) for sorting and distribution.³¹ Four railroad tracks in the yard led to the shipways and to the various service and shop buildings in Yard No. 3. Upon completion, there were approximately thirty buildings that housed every trade required for shipbuilding. Approximately 9,500 men were employed at the yard, with much of the work completed in two shifts, keeping the plant operational almost 24-hours a day.³²

Harriman Yard was erected on the site of the former Standard Cast Iron Pipe and Foundry Company. A number of existing buildings were renovated for use by the shipyard including

²⁵ Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 141 and 142.

²⁶ "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918), 165 and "Harriman, a 'Triumph of Patriotism,'" *The Advance of Bucks County*, October 20, 1983, 3.

²⁷ The town was given the name Harriman after William Averill Harriman, chairman of the Merchant Shipbuilding Corporation's board of directors. "Harriman, a 'Triumph of Patriotism,'" *The Advance of Bucks County*, October 20, 1983, 3 and Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 142.

²⁸ "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918): 165.

²⁹ "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918): 168.

³⁰ "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918): 168.

³¹ "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918): 167.

³² "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918): 165.

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those that became: the main plate and furnace shops, pipe, sheet metal and riggers' shop, machine shop, boiler and blacksmith shop.³³ All new buildings were designed in steel or reinforced concrete construction as the buildings were intended to be for permanent shipbuilding use, irrespective of the emergency needs.³⁴ New buildings that were constructed included: the shipwrights' shop, joiner shop, paint shop, pipe storage building, and the General Stores and Mold Loft Building.

General Stores and Mold Loft Building at Harriman Yard

Of the new buildings erected at Harriman Yard, the General Stores and Mold Loft Building was the most impressive in size and the most important in function. The three-story, reinforced concrete building measures 200 x 300 feet, and was completed in a record forty days, a testament to the importance of the building in the shipyard's operation.³⁵ As documented on the Sanborn Map of 1919,³⁶ the 1st and 2nd floors were used for storage (presumably of molds or templates) and the 3rd floor served as the template shop or mold loft.

The form and features incorporated into the design of Harriman Yard's Mold Loft were standard for mold loft architecture and remained so in the ensuing decades. Mold loft buildings were very large buildings with minimal obstructions in floor plan to allow for the lines to be drawn full scale on the floor. Maximizing natural light was also essential for lofting and mold lofts typically contained large window openings as well as clerestory windows or sawtooth roofs. Mold lofts usually had their own storeroom in which all molds or templates were housed.³⁷

Harriman's mold loft, strategically located in the upper story of the building, provided for ample natural light with wide bays of industrial steel windows stacked in a double height and a clerestory running north-south down the center of the building. The exposed steel truss on the third floor allowed for a vast open floor with minimal interruptions. With the first and second stories of the building dedicated to storage, the mold loft at Harriman afforded adequate space for the storage of templates.

The New York Shipbuilding Corporation's shipyard in Camden, New Jersey employed the first mold loft system for shipbuilding. When the shipyard opened in 1900, it featured the revolutionary template system for shipbuilding.³⁸ During World War I the lofting system was employed at the three prefabricated shipyards (as well as at many traditional shipyards), and by World War II, lofting had become standard practice in ship construction. New York

³³ "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918): 167.

³⁴ "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918): 167.

³⁵ "Shipping Board's Bristol Plant," *International Marine Engineering* (April 1918): 167.

³⁶ Sanborn Map Company, *Insurance Maps of Bristol, Pennsylvania*, New York, 1920 (surveyed in 1919).

³⁷ G.A. Bisset and Whitford Drake, *The Practical Loftsmen*, Compiled in the Hull Division, Navy Yard, Puget Sound Washington, May 1918.

³⁸ "New York Ship - The History," http://www.sff.net/people/K-Mac/NYSB_history.htm.

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Shipbuilding's Mold Loft was similar to Harriman's with a vast open floor and high ceilings afforded by a hanging steel truss system.³⁹

Harriman Yard Closure

The Great War ended before the Emergency Fleet Corporation's shipbuilding program was well underway. At Harriman, fifteen keels were laid during the war, but only the first three ships were launched before the war ended on November 11, 1918, and not one was delivered before that time.⁴⁰ In March 1919, the Emergency Fleet Corporation canceled the twenty-ship contract of December 1917, but honored the previous agreement for forty ships.⁴¹ Despite the fact that the Harriman ships never served active duty during the war, they proved instrumental for a number of years following the close of the war, transporting food and supplies to US troops stationed in post-war Europe.⁴²

As originally conceived, Harriman was to remain a permanent shipyard following the close of the war. However, the great number of ships built during the war resulted in an adequate fleet and a decision was made to close Harriman Yard.

Following the end of the war, the Bristol shipyard buildings were acquired for various manufacturing uses. Keystone Aircraft Corporation, manufacturers of amphibious aircraft, occupied the northern third of the site; Superior Zinc Corporation occupied the central third; and the Manhattan Soap Company occupied the southern third.

SIGNIFICANCE IN ARCHITECTURE

The building possesses significance in the area of architecture as an important example of an early reinforced concrete industrial building by the work of an important builder, Fred T. Ley & Company.

Late nineteenth century reinforced concrete buildings imitated masonry construction with traditional masonry cladding and ornamentation applied to the concrete framework. Great advancements were made in reinforced concrete technologies around the turn of the 20th century. Two methods of reinforced concrete construction prevailed: the beam-and-girder

³⁹A photograph of the New York Shipbuilding's mold loft appeared in, David A. Scott, Jr., *50 Years New York Shipbuilding Corporation* (Camden, NJ, 1949).

⁴⁰ Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 147.

⁴¹ Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 147.

⁴² Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921," *Nautical Research Journal*, Vol. 44, No. 3 (September 1999): 147.

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method that closely followed timber frame construction with columns, girders and slab floors; and the flat-slab method that relied on a streamlined form with mushroom-shaped column capitals. By 1920, the flat-slab method was preferred because it was cheaper, it allowed for more head-room and was easier to construct.⁴³

In the first decade of the 20th century, designers of reinforced concrete buildings began to express the truthfulness of the technology by exposing the concrete grid. The daylight factory form had evolved with its exposed concrete framework, minimal applied ornamentation and large banks of windows. Reinforced concrete allowed for increased weight stresses and the resulting buildings offered large floor plates with a minimum of structural columns which provided more usable floor area.

The reinforced concrete flat-slab construction employed in the General Stores and Mold Loft Building was progressive at the time the building was completed in 1917.

Fred T. Ley & Company, Inc. of New York and Springfield, Massachusetts was commissioned for the construction of the building. Fred T. Ley & Company was also commissioned for the planning and design of nearby Harriman Village. The impressive list of projects completed by Fred T. Ley & Company includes the Chrysler Building in New York City and an apartment building on Park Avenue that was the first building to be built directly above the underground railroad tracks of Grand Central Terminal.⁴⁴

⁴³ Amy E. Slaton, *Reinforced Concrete and the Modernization of American Building, 1900-1930* (Baltimore: The Johns Hopkins University Press, 2001), 134.

⁴⁴ "The Chrysler Building," <http://www.chryslerbuilding.org/bottom.html> and "Fred T. Ley & Company, Inc.," <http://www.skyscrapers.com/english/company/0.9/101169/>.

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VERBAL BOUNDARY DESCRIPTION

Beginning at the northeast corner of Radcliffe Street and Pine Grove Street and continuing northeast 320 feet to a point (A); thence continuing southeast a distance of 240 feet (parallel to the south elevation of the General Stores and Mold Loft Building) to a point (B); thence continuing northeast a distance of 340 feet (parallel to the east elevation of the General Stores and Mold Loft Building) to a point (C); thence continuing northwest a distance of 240 feet to the east curb line of Radcliffe Street(D); thence continuing southwest a distance of 340 feet back to point A.

Containing 1.8 acres more or less.

BOUNDARY JUSTIFICATION

The boundaries as described comprise the building footprint with a 20 foot setback around the entire building perimeter. At the time of construction, Harriman Yard encompassed several blocks. In the decades following the close of World War I, the property was repeatedly subdivided into smaller parcels. After the yard was subdivided, most of the historic buildings were demolished and some new buildings were constructed. The only two buildings that remain are the General Stores and Mold Loft Building (subject of this nomination) and a Paint Shop. The paint shop is located several hundred yards from the Mold Loft Building on a separate parcel. The Paint Shop has been extensively altered and lacks integrity.

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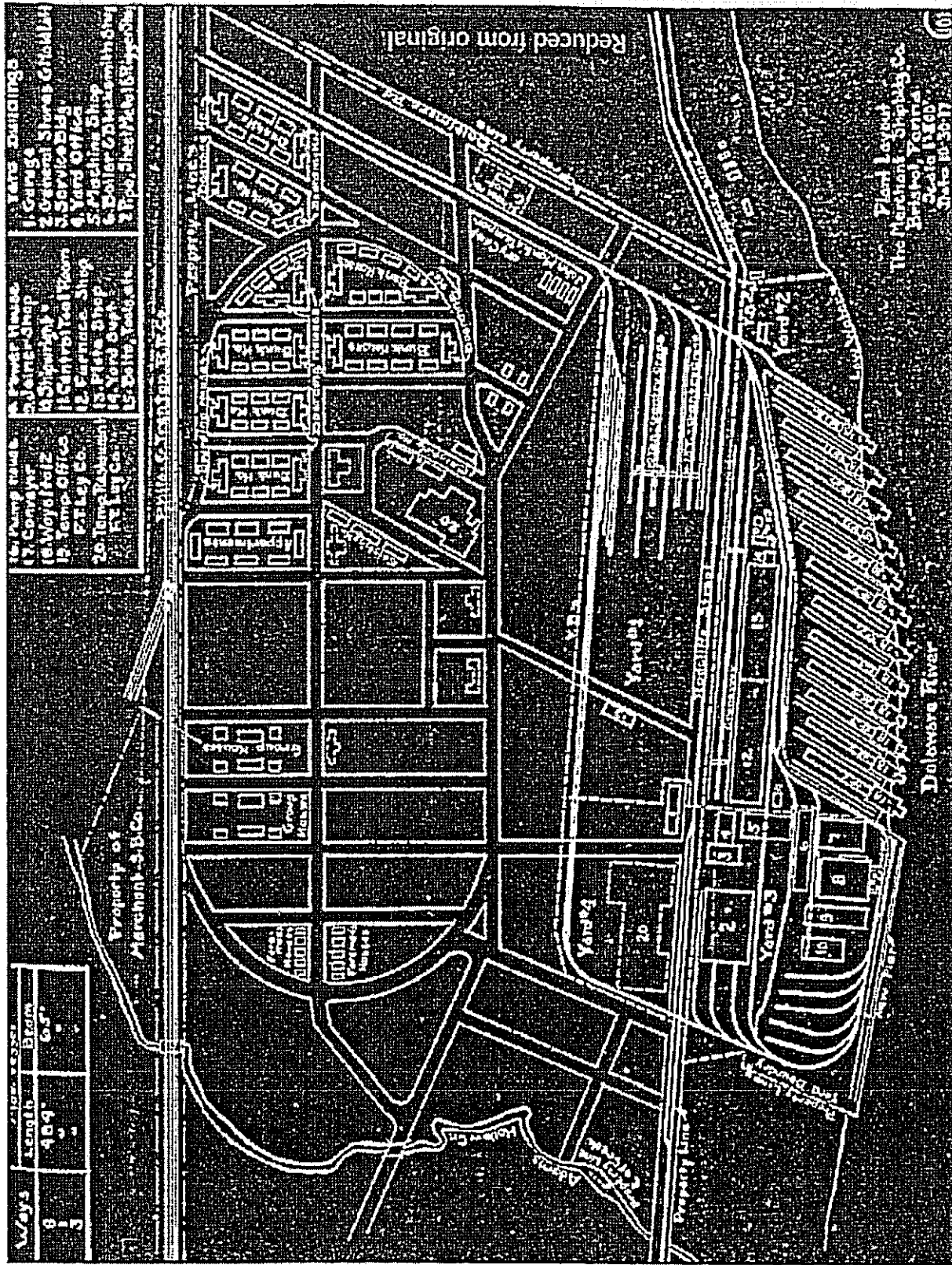
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**General Stores and Mold Loft Building, Harriman Yard of the Merchant Shipbuilding Corporation
Bristol Borough, Bucks County, Pennsylvania
Robert Powers
February 2002
Powers & Company, Inc.**

<u>Photograph #</u>	<u>Description of View</u>
1	Looking Northeast at West and South Elevations
2	Looking Northeast at South Elevation Showing Main Entrance
3	Looking Northwest at South and East Elevations
4	Looking Southwest at East and North Elevations
5	Detail of Entrance on East Elevation
6	Detail of Original Windows Beneath Modern Siding
7	Detail of Original Windows Beneath Modern Siding
8	Detail of Original Windows Beneath Modern Siding
9	1 st Floor, Looking North
10	1 st Floor, Looking Northeast
11	Stair from 1 st to 2 nd Floor
12	2 nd Floor, Looking Northwest
13	2 nd Floor, Looking Southeast
14	Freight Elevator, 2 nd Floor
15	2 nd Floor Fire Door
16	Stair from 2 nd to 3 rd Floor
17	3 rd Floor, Looking Southwest
18	3 rd Floor, Looking Northwest
19	3 rd Floor Clerestory Windows, Looking Southwest
20	Freight Elevator, 3 rd Floor

**General Stores and Mold Loft Building, Harriman Yard of the Merchant Shipbuilding Corporation
Bristol, Bucks County, PA**



This 1917 drawing shows the entire Harriman shipyard and residential community in Bristol. The General Stores and Mold Loft Building is indicated by the building numbered "2" in the lower left quadrant. This image published in: Michael Bernstein, "Fabricated Ship Construction at Bristol, Pennsylvania, 1917-1921" *Nautical Research Journal*, Vol. 44, No. 3 (September 1999), 141.