

PIER 35 SOUTH  
759 South Delaware Avenue  
Philadelphia  
Philadelphia County  
Pennsylvania

HAER No. PA-174

HAER  
PA  
SI-PHILA,  
728-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
Northeast Region  
Philadelphia Support Office  
200 Chestnut Street  
Philadelphia, Pennsylvania 19106

HAER  
PA  
SI-PHILA  
728-

HISTORIC AMERICAN ENGINEERING RECORD

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HAER No. PA-174

Location: 759 South Delaware Avenue, Philadelphia,  
Philadelphia County, Pennsylvania.

USGS Philadelphia Quadrangle, Universal Transverse  
Mercator Coordinates: 18.487850.4420660

Present Owner: Portside Investors

Present Occupant: Vacant

Present Use: Vacant

Significance: Pier 35 South is a rare extant example of timber  
crib pier construction along the Philadelphia  
waterfront. Crib construction, in which a series of  
timber boxes are filled with rubble and sunk,  
forming the pier structure, constituted one of the  
most common methods of building piers and wharfs in  
the eighteenth century. By the first decades of the  
nineteenth century this method had given way to pile  
construction, which required substantially less  
timber.

The earliest extant portions of Pier 35 South date  
from the 1830s, well after pile construction became  
common. The survival of crib construction into the  
middle decades of the nineteenth century indicates  
the presence of a substantial degree of continuity  
in pier construction techniques and suggests that  
new building technologies did not totally eliminate  
earlier, more traditional technologies.

Project Information: This documentation was undertaken in May 1989 in  
accordance with direction provided by the  
Pennsylvania Historical and Museum Commission's  
Bureau for Historic Preservation as a mitigative  
measure prior to the construction of a new pier  
structure atop the existing ruins of Pier 35 South.

Pier 35 South is located on the east side of Delaware Avenue, just north of Fitzwater Street, in Philadelphia, Pennsylvania. The pier measures roughly fifty feet in width, with the exception of the structure's westernmost thirty-five feet, which is seventy feet wide. The pier extends approximately 200 feet into the Delaware approximately sixty-five feet south of Pier 34 South and 140 feet north of Pier 36 South.

The pier projects into the river at a slight downstream angle. Its upstream and downstream faces are parallel, except, as noted above, for the first thirty-five feet of the north face, which projects approximately twenty feet farther north than the remainder of the structure. The east elevation is angled slightly downstream so that it is not parallel to the Delaware Avenue bulkhead face.

At present the pier is in a ruinous condition. The cumulative effect of more than one hundred years exposure to tides and currents has severely deteriorated much of the structure. Portions of both the north and south elevations have collapsed and washed away, leaving the pier nearly submerged at high tide. The east end of the north face is the most intact portion of the structure and survives to its original height of six feet above average low water. The pier decking, most recently concrete slab construction, is largely missing. Those portions of the decking that survive are broken and deteriorated, exposing the underlying fill.

Pier 35 South is constructed of a series of connected wooden cribs, or cells, each filled with sand, mud, and rubble. The pier is divided into two distinct sections by a decked-over passage, or sluice, that passes completely through the structure from north to south. The portion of the pier located west of this sluice antedates that to the east of the sluice, although the construction techniques and methods in each section exhibit little significant variation. Microscopic analysis of pier timbers indicates that both sections of the structure are constructed almost exclusively of Southern yellow pine. Some random timbers, possibly representing repairs to the original structure, are Eastern white pine. The decking above the sluice is hemlock.<sup>1</sup>

The older, west portion of the pier abuts the shoreline at the east curb line of Delaware Avenue and extends approximately 140 feet east to the sluice. The north and south faces are not of equal length, because the pier is attached to the shoreline at an angle. The north face measures approximately 196 feet in length, while the south face measures 220 feet. The pier measures approximately seventy feet in width at the Delaware Avenue bulkhead and narrows to fifty feet in width at a point approximately thirty-five feet from the shore. The end of the west portion of the structure, which

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<sup>1</sup>Robert C. Baldwin to John Milner Associates (May 23, 1989).

comprises the west face of the sluice, is aligned at an angle to Delaware Avenue corresponding to the Port Wardens' Pierhead Line, the legal limit that a pier could extend into the river channel.

The decked sluice separating the east and west sections of the pier is wedge-shaped in plan. The sluice's north opening, which is largely filled with accumulated silt, measures 9.6 feet in width. The south opening was originally the same size as the north opening, but has been narrowed to a four-foot width by the introduction of an approximately six-foot long coursed timber wall. The sluice permitted tide and current to pass freely through the pier structure, reducing the tendency of the water to topple the structure and sluicing away silt trapped against the pier's upstream face. The pier continues for approximately seventy-five feet beyond the sluice.

The construction techniques employed at Pier 35 South are remarkably consistent throughout the structure, despite the fact that several distinct phases of construction are represented. In general the pier consists of a series of connected wooden cribs infilled with stone, rubble, and brick. The exposed vertical surfaces of the cribs, which form the exterior faces of the pier, are constructed of hand-hewn timbers. The non-exposed surfaces, which form the sides of the cribs and lie buried within the pier structure, are constructed of rough-cut logs, some with the bark attached.

The hewn timbers that form the south and north faces of the pier measure roughly nine inches by sixteen inches in section and vary in length from thirty-six to thirty-eight feet. The timbers are laid in horizontal, sixteen-inch courses with overlapped ends. Each course is fastened to the course below by a series of one-inch diameter wrought iron rods inserted into holes bored or drilled in the timbers.

Transverse timbers, or headers, extend into the interior of the pier, providing additional support for the face wall. The headers are connected to the face wall by means of half-dovetail notching and are secured in position with wood treenails or iron spikes. The notches for the dovetails are cut into the upper and lower surfaces of the face logs and measure roughly three to four inches deep and nine to sixteen inches wide. Some variation in this pattern of joinery is evident, but the vast majority of visible connections between the face timbers and the headers consist of half-dovetail notching. The majority of the visible headers are rough logs, eight to sixteen inches in diameter and in some instances over twelve feet long. Squared timber headers, averaging twelve inches by nine inches in section, are also evident.

Limited subsurface investigations in a small area near the northwest corner of the structure revealed further construction details. At a point approximately six feet from the face wall a transverse timber passes beneath a log set parallel to the face wall. The two logs are saddled, to form a secure joint, and are fastened together with a treenail. The parallel log is

cut off in line with the header and does not extend beyond the intersection of the two members. At a second point, approximately 7.5 feet beyond the face wall, the transverse log passes above a second parallel log. As in the first instance, the two members are fastened together with a treenail at a saddle joint. Unlike the first instance, the second parallel log extends beyond the header, although silt, rubble, and the high water table prohibited determining the full length of this member.

In July 1988 SITE engineers, Inc. took a number of boring samples in the vicinity of Pier 35 South that provide additional data regarding the subsurface portions of the structure.<sup>2</sup> Sample B-10, taken from a point approximately forty-five feet east of the shoreline bulkhead along the north face wall, revealed the remains of wood decking located six feet below the surface. This decking measured one foot in depth and supported fill consisting of concrete, rubble, brick, sand, and gravel. Below the decking lay brownish-black organic clayey silt littered with occasional brick and wood fragments. This layer represents the original river bed upon which the crib rested. The brick and wood fragments in this layer may result from human activity conducted prior to construction of the pier, from the construction activity itself, or from crib fill that simply filtered through gaps in the crib floor.

Sample B-13 was taken from a point near the south opening of the sluice. The boring encountered brick and concrete rubble, mixed with sand and gravel, to a depth of eleven feet. Below this fill, wood cribbing extended to a depth of seventeen feet. Beneath the cribbing lay organic silt similar to that encountered in the first sample.

The final sample, B-11, was taken from a point at the northeast corner of the pier, more than two hundred feet from shore. This boring encountered a layer of yellow pine (a timber species commonly used in nineteenth century wharf construction) fifteen feet below the surface.<sup>3</sup> This two-foot thick layer of wood overlay dark black organic clay. Beneath this clay, at a depth of thirty-three feet, a second one foot thick layer of yellow pine was encountered. This rested atop a second layer of silty clay, which sealed yet

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<sup>2</sup>SITE engineers, inc., "Geotechnical Engineering Services. Portside Development. Piers 30, 34, 35 and 36, Philadelphia, PA," TS report prepared for Portside Investors L. P. (Mt. Laurel, New Jersey: SITE engineers, inc., 1988), Appendix A -- Field Data.

<sup>3</sup>Andrea J. Heintzelman, "Colonial Wharf Construction: Uncovering the Untold Past," *The Log of Mystic Seaport* (Winter 1986):128; Joan H. Geismar, "The Archaeological Investigation of the 175 Water Street Block, New York City," (1983), p. 702. Ms. on file at New York City Landmarks Preservation Commission, New York, NY.

a third layer of yellow pine. This last layer of pine began at a depth of thirty-seven feet and extended to forty-three feet below the surface. Below this pine lay black organic clayey silt. The three layers of yellow pine appear to be the floors of three individual cribs that were stacked one atop another in order to raise the structure above water.<sup>4</sup>

A variation in the general appearance of the structure is evident in the north face wall at a point approximately forty-five feet west of the sluice. In this area the face wall timbers are laid in angled, rather than horizontal, courses, with connections between the timbers resembling scarf joints. With this exception, this portion of the pier closely resembles the remainder of the structure in both appearance and construction details.

The west face of the sluice is faced with vertical timber fenders spiked to the face of the pier cribbing. The fenders measure roughly six inches by twelve inches. The east face of the sluice is not visible due to silting and the partial collapse of the feature. The sluice is bridged by plank decking supported on logs measuring approximately one foot in diameter and spiked into the cribbing. The south portion of this decking has partially collapsed.

Wood piles, apparently used as fenders, line the pier's north and south face walls. The badly deteriorated remains of these piles are evident immediately adjacent to both face walls. Individual piles measure eight to ten inches in diameter and are driven at approximately four-foot intervals. In addition to serving as protective fenders, the piles may have lent structural stability to the cribbing. Documentary evidence indicates that pier builders placed piles against the crib faces to stabilize the cribs prior to the placement of the fill.<sup>5</sup>

Portions of the pier appear to have been faced with additional timbers. The remains of this facing are evident at a point approximately 112 feet from the shoreline along the north face of the pier. The additional timbers appear to be attached directly to the original pier face by means of iron spikes. A series of three large piles, each approximately sixteen inches in diameter and placed approximately eight feet on center, support this timber facing and flank the sluice. It was not possible to determine the how far this facing extends to the east, beyond the sluice, because that portion of the pier is not exposed at low tide.

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<sup>4</sup>Joseph Gary Norman, "Eighteenth-Century Wharf Construction in Baltimore, Maryland" (master's thesis, College of William and Mary, 1987), pp. 8-9.

<sup>5</sup>Norman, "Eighteenth-Century Wharf Construction," pp. 20, 38.

The pier's east face is constructed in the same fashion as the north and south faces. The pier survives to its full height at this end, approximately six feet above high water. An iron bollard or snubbing post is located at each end of this face atop the pier deck. The concrete decking is broken and deteriorated. At the southeast corner of the pier a portion of the decking has collapsed, revealing what appear to be the remnants of an interior face wall, suggesting that the present east face of the structure may constitute an applied facing similar to that previously described at the north face.

Pier 35 South was constructed in two distinct phases. The oldest portion of the structure appears to date from the late 1830s. A later addition, attached to the east face of the earlier portion, probably dates from the late 1850s. Numerous subsequent alterations and incremental additions, as well as extensive physical deterioration, have greatly altered the structure from its ca. 1860 appearance.

A pier existed near this location from at least 1761, when Joseph Huddell purchased an eighteen-foot wide lot that included a wharf, blacksmith shop, and house, from James Stephens. This property fronted the east side of Swanson Street, the present Water Street, and extended east approximately 305 feet to low water, a point presently located in the middle of Delaware Avenue approximately 105 feet from the west curb line.<sup>6</sup>

Between 1761 and 1821 Huddell and his son and grandson, both also named Joseph, acquired additional property on Swanson Street, until by 1821 the grandson controlled a 94-foot frontage that extended east, across Wharf Street to low water.<sup>7</sup> Wharf Street, the present Delaware Avenue, underwent a series of improvements during this period as a result of an 1807 act by the city's Port Wardens. This legislation required that Wharf Street be widened to fifty feet to accommodate increased traffic. The act also restricted piers to a maximum length of 125 feet and a maximum width of twenty-five feet. The act cited the need to provide longer wharves to accommodate shipping during winter months, when the water along the banks of the Delaware tended to freeze, and to design wharves that permitted a regular current of water to flow through the dock area and prevent excessive silting.<sup>8</sup>

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<sup>6</sup>City of Philadelphia, James Stephens to Joseph Huddell (1761), Deed Book H, vol. 12, p. 308.

<sup>7</sup>City of Philadelphia, Patison Hartshorne to Joseph Huddell (October 16, 1819), Deed Book IW, vol. 4, p. 55; City of Philadelphia, William White to Joseph Huddell (June 26, 1821), Deed Book IW, vol. 8, p. 638.

<sup>8</sup>Christian K. Ross, comp., *Board of Wardens for Port of Philadelphia, 1895* (Harrisburg, PA: Clarence Busch, 1895), pp. 90-92.

The bulkhead line of the extant pier extends beyond the northernmost line of the Huddell properties, indicating that the structure postdates the youngest Huddell's sale of his properties to Michael Bouvier in 1836.<sup>9</sup> Bouvier owned the lot immediately north of the Huddell properties, which suggests that he built the oldest portions of the present pier after acquiring the Huddell properties. Michael Bouvier arrived in Philadelphia from his native France in 1815 and quickly established himself as a highly respected cabinetmaker. By 1825 Bouvier advertised a cabinet and sofa warehouse located at 91 South 2nd Street. Farther south on 2nd Street he maintained a steam mill, where imported marble was sawn into bureau and mantel tops.<sup>10</sup> It seems likely, given the extent of Bouvier's business activities and the date he acquired the Swanson Street properties from Joseph Huddell, that the oldest portions of the present Pier 35 South were probably constructed for Michael Bouvier, possibly as a landing point for the imported woods, veneers, and marbles used in his cabinetmaking business.

The Hexamer & Locher map of 1860 is the first graphic depiction of the Pier 35 South site at a scale sufficiently large enough to provide reasonably accurate comparisons to present dimensions and alignments. This map indicates the pier's bulkhead line lay 250 feet east of the east curb of Swanson Street, a point approximately fifty-five feet west of the low water mark described in the Huddell deeds. Only a portion of the present pier can possibly date to the 1830s, given the present breadth of Delaware Avenue. The rest of the structure was either destroyed or buried during the widening of the existing roadway. It appears that the surviving 1830s portion of Pier 35 South, based on analysis of deed and map information, is the northwest corner of the present structure. This corner consists of roughly 1,400 square feet and extends approximately thirty-five feet from shore along the northernmost forty feet of the Delaware Avenue bulkhead line.

The 1860 map indicates an addition to the pier extending approximately 120 feet beyond the east end of the earlier structure. This addition consists of a narrow, twenty-five-foot wide section, approximately twenty feet long, that angles downstream from the end of the earlier structure and connects that structure to a new landing stage measuring approximately fifty feet by one hundred feet. It appears likely that this addition dates to the 1850s. Michael Bouvier sold his Swanson Street properties, including the pier, to

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<sup>9</sup>City of Philadelphia, Joseph Huddell to Michael Bouvier (November 1, 1836), Deed Book SHF, vol. 10, pp. 120.

<sup>10</sup>Letter to Richard Tyler (December 29, 1987), 149 South Hancock Street File, Philadelphia Historical Commission.

John M. Mitchell, a merchant from Haddonfield, New Jersey, in 1854.<sup>11</sup> Mitchell, in turn, sold the property to Victor A. Santori, an importer, in 1857.<sup>12</sup> Santori owned the property at the time that the Hexamer and Locher map was prepared in 1860. Mitchell or Santori probably constructed the new landing stage and the narrow connector to the earlier structure. Both the connector and the new landing stage are incorporated into the present pier. The east end of the landing stage forms the west side of the sluice that divides the pier into two separate sections. The east end of the landing stage aligned with the 1860 Port Wardens' line, which determined the maximum legal length of all piers and wharfs.

Santori sold the pier and the adjacent Swanson Street property to Moro Philips, a merchant specializing in chemicals and fertilizers, in 1868.<sup>13</sup> In 1890 Philips's estate sold the property to the Pennsylvania Warehousing & Safe Deposit Company.<sup>14</sup> During the period of Philips' ownership the pier was enlarged to its present dimensions of roughly fifty feet by 220 feet. In 1871 Delaware Avenue was widened thirty feet to an eighty-foot width.<sup>15</sup> Probably in conjunction with these street improvements Philips infilled the southwest corner of Pier 35 South to obtain a ninety-foot frontage on the newly widened street. In addition, Philips extended the fifty-foot wide pier seventy-five feet into the Delaware.

In 1892 the Pennsylvania Warehousing & Safe Deposit Company sold the property to the Philadelphia & Reading Railroad.<sup>16</sup> Between 1895 and 1910 Delaware

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<sup>11</sup>City of Philadelphia, Michael Bouvier to John M. Mitchell (May 26, 1854), Deed Book TH, vol. 149, p. 283.

<sup>12</sup>City of Philadelphia, John Mitchell to Victor A. Santori (November 14, 1857), Deed Book ABD, vol. 122, p. 257.

<sup>13</sup>City of Philadelphia, Victor A. Santori to Moro Philips (April 24, 1868), Deed Book JTO, vol. 143, p. 189.

<sup>14</sup>City of Philadelphia, Frederick Philips et al. to Pennsylvania Warehousing & Safe Deposit Co. (February 28, 1890), Deed Book GGP, vol. 602, p. 540.

<sup>15</sup>Ross, *Board of Wardens, 1895*, p. 127.

<sup>16</sup>City of Philadelphia, The Pennsylvania Warehousing & Safe Deposit Co. to Philadelphia & Reading Railroad Co. (May 20, 1892), Deed Book TG, vol. 202, p. 124.

Avenue was widened an additional sixty feet to its present 140-foot width.<sup>17</sup> This work buried sixty feet of Pier 35 South beneath new roadway and reduced the structure's Delaware Avenue bulkhead frontage to sixty feet. In 1909 the Reading Company leased the pier to the Independent Pier Company, who occupied the property until at least 1955.<sup>18</sup>

In 1955 the pier consisted of a timber crib with a concrete working surface and a railroad siding. The pier measured fifty feet in width and had 225 feet of berthing space along the south side and 200 feet along the north side. The pier provided only about half of the berthing space afforded by other piers along the Delaware, which measured as much as 580 feet in length. The availability of only seven feet of water alongside the pier at low tide further restricted the size and type of vessels that could utilize the facility. A pier shed consisting of a single story steel frame building clad with corrugated metal siding sat atop the pier's working surface. The shed measured 48 feet by 218 feet and was used to store stevedoring equipment.<sup>19</sup>

The Reading Company continued to own the property until 1960, when it was sold to the Independent Terminals Company, apparently an offspring of the Independent Pier Company.<sup>20</sup> The present owner, Portside Investors, acquired the deteriorated structure, which is presently in a ruinous condition, in 1985.<sup>21</sup>

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<sup>17</sup>G. W. Baist, *Baist's Property Atlas of the City and County of Philadelphia* (Philadelphia: G. W. Baist, 1895); G. W. Bromley and W. S. Bromley, *Atlas of the City of Philadelphia* (Philadelphia: G. W. Bromley & Co., 1910).

<sup>18</sup>*Philadelphia (PA) Bulletin* (May 1, 1955).

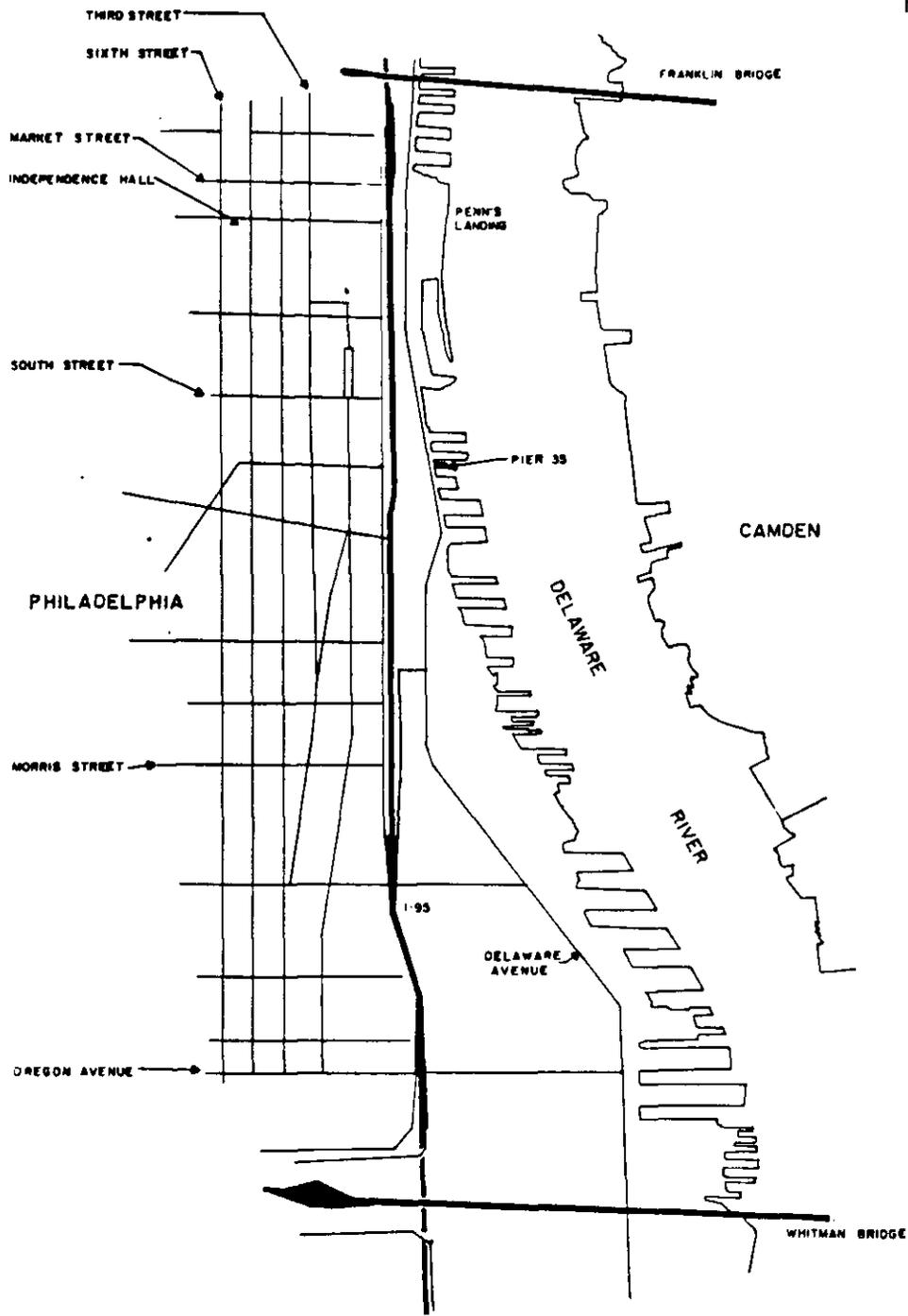
<sup>19</sup>U.S. Army Corps of Engineers, *The Port of Philadelphia, Pennsylvania and Camden and Gloucester City, New Jersey*, Port Series No. 7, revised 1955 (Washington: U.S. Army Corps of Engineers and U.S. Department of Commerce Marine Administration, 1956), p. 100.

<sup>20</sup>City of Philadelphia, Reading Co. to Independent Terminals Company (1960), Deed Book CA8, vol. 1516, p. 44.

<sup>21</sup>City of Philadelphia, Deed Microfiche for Map 5-S-12, Lot No. 21 (1985).

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LOCATION MAP



