

South Brooklyn Freight Terminal: 29th Street Pier
(Isbrantsen Pier)
Opposite the end of 29th Street on Upper New York Bay
Brooklyn
Kings County
New York

HAER No. NY-203

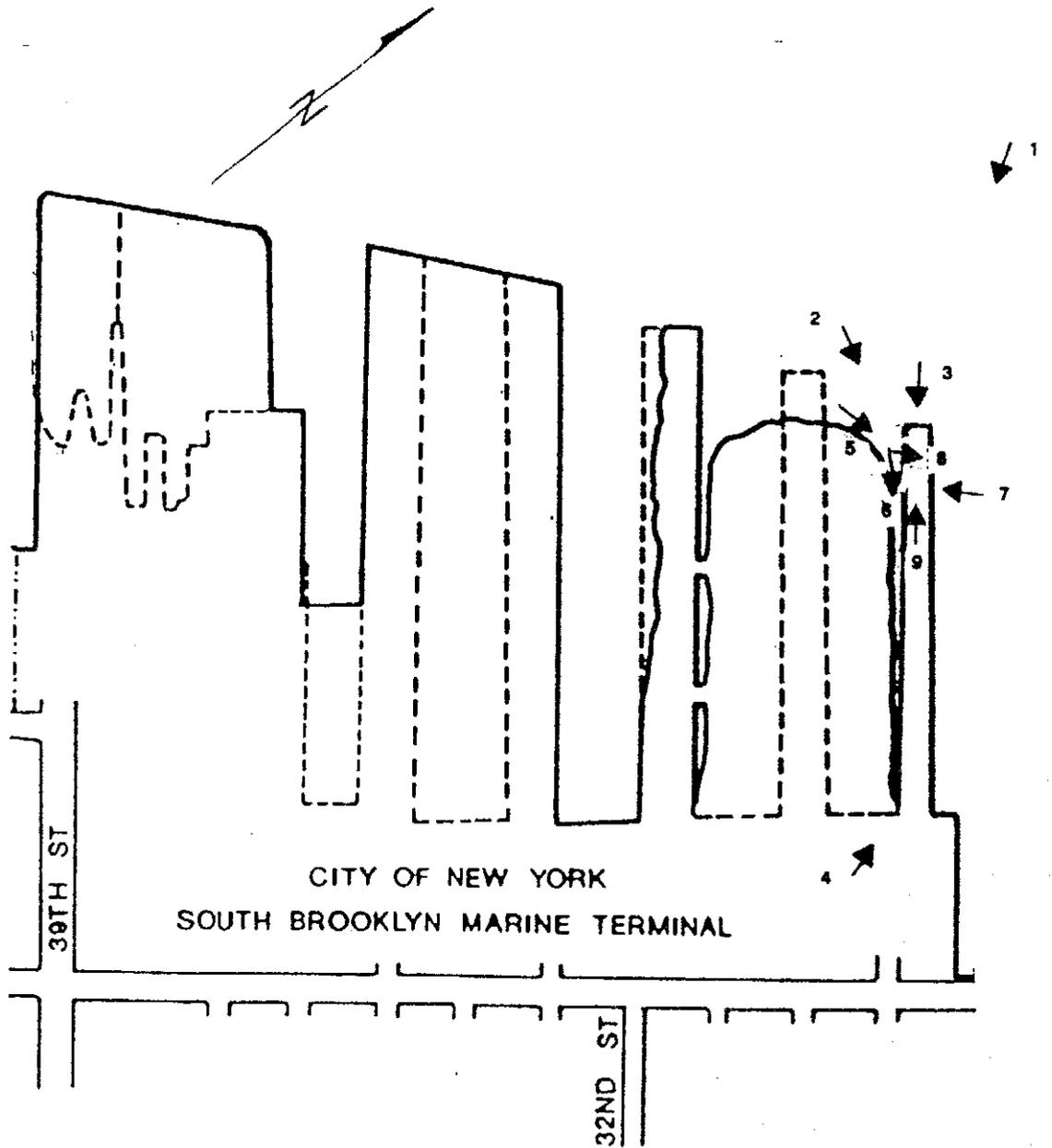
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
MID-ATLANTIC REGION, NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR
PHILADELPHIA, PENNSYLVANIA 19106

South Brooklyn Freight Terminal: 29th Street Pier (Isbrantsen Pier)
HAER No. NY-203 (Page 3)
Key to Photographs



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HISTORIC AMERICAN ENGINEERING RECORD

SOUTH BROOKLYN FREIGHT TERMINAL: 29TH STREET PIER
(Isbrantsen Pier)

HAER No. NY-203

Location: On Upper New York Bay, opposite the end of 29th Street
Brooklyn, Kings County, New York

USGS Quadrangle: Jersey City, New Jersey - New York
UTM Coordinates: 18.683850.4501600

Dates of Construction: 1915-16; southwest side widened c1959

Engineers: Charles Staniford, Chief Engineer, New York City
Department of Docks and Ferries; S.W. Hoag, Deputy
Chief Engineer; R.T. Betts, Assistant Engineer in
charge of Design

Present owner: New York City Department of Ports and Trade
Battery Maritime Building
1 Whitehall Street
New York, NY 10004

Present use: Vacant; last used for cargo handling c1980

Significance:

The South Brooklyn Freight Terminal, built 1909-16 by the New York City Department of Docks and Ferries, was part of a municipal attempt to reorganize shipping in the Port of New York, by providing separate freight facilities away from the congested West Side of Manhattan. Selection of South Brooklyn for this effort followed the successful development of the private Bush Terminal, with its warehouse facilities and rail links with other parts of the port. The five piers built by the department represented most of the city's construction efforts in this program, which remained essentially undeveloped. The program was important in influencing other large Brooklyn waterfront projects, and the municipal piers included innovative design features on which some other piers were modeled c1910-18. The department never fully developed the South Brooklyn Freight Terminal, and this name passed out of use as the five piers were leased to individual shipping companies. The Isbrantsen Company, a tenant at the 29th Street Pier in the 1950s, was the last firm using the pier to have a prominently-displayed corporate name on the piershed; the name became a vernacular designation for the pier. As the most intact of the original five piers, the 29th Street Pier is significant for best representing both the freight terminal plan and the advances in pier substructure engineering. It is also significant as one of a small and dwindling number of surviving general cargo piers with piersheds in the Port of New York predating World War I. Such structures reflect the last important period of regional waterfront development in the era of traditional break-bulk cargo handling.

Project Information:

The 29th Street Pier is eligible for inclusion on the National Register of Historic Places. As part of the New York Harbor Collection and Removal of Drift Project implemented by the Army Corps of Engineers, the pier will be removed. This documentation meets conditions for mitigating adverse effects to the pier, according to the terms of a Memorandum of Agreement among the Advisory Council on Historic Preservation, the New York State Historic Preservation Officer, and the New York District, Corps of Engineers. Project actions may occur as early as 1989.

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Part I: Historical Information*

A. Historic Context of Terminal Development

The creation of Greater New York City in 1898 brought Brooklyn's waterfront under the authority of the city's Department of Docks and Ferries for the first time. Established in 1870, the department oversaw waterfront development, and devised pier and bulkhead designs to serve as standards for both public and private projects. Department actions included construction of facilities for lease to private firms, and planning for better management of the city's expanding, often congested waterfront. By the 1890s, the heart of passenger and freight shipping in the Port of New York was on Manhattan's extremely crowded West Side, with a strong freight and grain storage district on the Brooklyn coast from Red Hook north (Figure 1). The shore south of the Gowanus Canal remained relatively undeveloped at this time, for reasons outlined below. By the early 20th century, private industrial transportation growth stimulated the department to consider use of this shore as a center for marine freight handling. New freight terminals in Brooklyn were intended to relieve congestion at the extremely crowded shipping terminals on Manhattan's West Side, where conditions threatened to undermine the port's commanding share of American maritime commerce. The department completed only part of its original plan, but the proposal was an important model for later public and private development, acting as a legal template for private builders and greatly influencing projects such as the Brooklyn Army Supply Base.

Brooklyn's industrial waterfront had expanded rapidly c1840-1880, reaching Gowanus Bay, and including creation of the Gowanus Canal c1867-1873. Industrial development south of the canal was limited by distance from the port's Manhattan commercial center, lack of street railways and railroad freight service, and shallow offshore conditions which increased pier construction costs. Elevated street railways expanding south of the canal in the 1880s encouraged residential growth of European immigrant communities in what became the Sunset Park area. Railroad freight service, critical to movement of goods across or around the harbor, arrived more slowly. Local rail companies built several freight piers in the 1880s to serve nearby lumber and coal yards, and other bulk product handlers, but most of these freight stations were short-lived. Uncertainties about federal construction of a deepwater channel allowing passage of ships, and absence of shoreline or marginal rail connections between freight terminals, limited investments in South Brooklyn waterfront transportation. A passenger ferry at 39th Street, planned as a possible freight station, closed in 1898 after about nine years operation. By 1895, the most important industrial features on the South Brooklyn coast were the beginnings of a Long Island Railroad (LIRR) freight terminal at 65th Street, a few shipyards using small, inexpensive pile piers, and a few manufacturers requiring only lighterage facilities (Stiles 1870: 582-84; Brockett 1884: 643; Robinson 1886; Bromley 1893; Seyfried 1966: 4, 94; Ment and Donovan 1980: 57-65; Raber, Flagg, Parrott et al. 1984: 31, 63-91; Raber et al. 1985: 22-26).

* Capitalized references are to photographs in this documentation.

Irving Bush's development of Bush Terminal, built principally between 1895 and 1912, began a significant transformation of the South Brooklyn waterfront and the Sunset Park upland. Reacting in part against the congestion and lack of effective warehousing and cargo transfer in older parts of the port, Bush combined shipping facilities, several types of warehousing, manufacturing space, and a 1.5-mile marginal railroad operating within his complex and along First and Second avenues between 29th and 64th streets. Bush Terminal, with its nearly 200 acres of piers, factories, warehouses, and rail connections between 36th and 51st streets, was the largest multi-tenant industrial property in the United States by World War I, and offered integrated manufacturing, warehousing, and transportation services. The Bush Terminal Railroad was critical in providing rail links to other American lines, via transfer bridges at 51st Street and at the LIRR yards at 65th Street. Transfer bridges facilitated freight car movement across the harbor, and eliminated Brooklyn's relative isolation from major rail connections made through the port in New Jersey, Manhattan, and the Bronx. Bush's combination of services proved extremely successful, and the terminal became a major factor in Sunset Park employment and industrialization, accounting for as many as 20,000 jobs (Brooklyn League 1914: 21-22; Rush 1920: 289-301; Ment and Donovan 1980: 64-65; Raber et al. 1985: 26; Flagg and Raber 1986).

B. Municipal Plans and Terminal Construction

The rail and warehousing facilities provided by Bush Terminal increased the value of the relatively inexpensive South Brooklyn waterfront for port planning. Proposed federal development of the Bay Ridge channel, off the South Brooklyn coast, further encouraged municipal development. The Department of Docks and Ferries in 1906 proposed new steamship facilities north and south of Bush Terminal, envisioning the 'municipalization' of the Brooklyn waterfront with modern piers backed by warehouses and served by rail connections. Conceived as part of a "...logical plan of port organization which assigns to the Brooklyn waterfront the heavier cargo business," the plan proposed by Commissioner of Docks Calvin Tomkins was extremely ambitious (New York City Department of Docks and Ferries 1907-19: 1916, p. 9). He proposed

"..the eventual municipalization..of the entire shore from the Brooklyn Bridge on the north to the Pennsylvania R.R. freight yard at 65th St. on the south. This is to be accomplished by developing .. city property.., gradually acquiring the existing private freight terminals, extending the marginal railroads north and south, operating these under municipal control, and constructing at various points carfloat bridges and additional ferries to Manhattan for drays and passengers" (Staniford and Guise 1912: 423).

The proposed municipal control was in the form of long-term leases to shipping firms of facilities built or owned by the city. In South Brooklyn, the department did not begin construction of its piers until it had commercial shipping tenants ready to take over the facilities when complete (New York City Department of Docks and Ferries 1907-19, 1911, 1912; Raber et al. 1985: 26).

SOUTH BROOKLYN FREIGHT TERMINAL: 29TH STREET PIER
(Isbrantsen Pier)
HAER No. NY-203 (Page 5)

Following approval by city authorities, the department acquired the 39th Street ferry in 1906, and, in 1908, available waterfront between 28th and 36th, 38th and 39th, and 60th and 61st streets. The ferry was immediately reconstructed, with work completed in 1908. In the active sense proposed by Tomkins, completion of the remainder of the plan was limited to development of five piers between 29th and 35th streets. The gradual decline of commercial waterfront growth in the port after 1905 tended to limit municipal investment in additional facilities. The department also devoted much of its available resources towards construction of larger piers on Manhattan's West Side to berth lengthening passenger liners, for nearly four decades beginning in 1897: retaining New York's long-standing dominance of liner traffic was a municipal priority. For these reasons, there was no public acquisition of the large private freight terminals in Brooklyn while these terminals remained profitable. Despite the incomplete execution of the South Brooklyn plan, however, adoption of the plan as part of New York City's map for development influenced other large public projects. During and just after World War I, Federal construction of the Brooklyn Army Supply Base between 58th and 64th streets, and New York State construction of a Barge Canal terminal on the north side of Gowanus Bay, followed many elements of the city plan (Historic American Engineering Record 1986, 1988).

The department called the waterfront property between 28th and 36th streets "the Gowanus Section." The shore here in 1906 was at Second Avenue, where an undocumented late 19th century timber bulkhead supported fill along the west side of the street. After two years of test borings and dredging, construction of what was to be the South Brooklyn Freight Terminal began in 1909. The first phase, completed in 1912, included erection of a new stone bulkhead 500 feet west of Second Avenue between 28th and 36th streets, and of two piers between 31st and 33rd streets. Department contractors completed the former pier first, between August 1909 and October 1910, with the 33rd Street pier built 1910-1912. Following more contracts with shipping tenants, the department completed the second phase of terminal construction in 1915-16, building three additional piers at 29th, 30th, and 35th streets. Pier length, adjusted to the federal pierhead line in Gowanus Bay, varied between about 1200 and 1780 feet from 29th to 35th streets respectively. Pier width varied somewhat proportionately with length, with the 29th Street Pier narrowest at about 80 feet, the 30th Street Pier about 50 feet wider, the adjacent 31st and 33rd street piers each 150 feet wide, and the 35th Street Pier widest at about 175 feet. Each pier had a single-story, steel-framed, iron-sided piershed covering virtually the entire deck (Staniford and Guise 1912; Department of Docks and Ferries 1907-19; Army Corps of Engineers 1926, 1932, 1942, 1953, 1965).

C. Significance of Pier Design

The Gowanus Section piers had important design features. From c1865 to 1920, Port of New York waterfront structures underwent slow but significant modifications. Engineers tried new materials and designs to meet the relatively wide range of commercial and industrial projects, with gradual introductions of iron, steel, and concrete to older wood and stone forms. The Department of Docks and Ferries was in the forefront of new designs, and attempted to design durable waterfront structures as well as plan for more rational port commerce. The original department mandate included the replacement of dilapidated private structures with permanent improvements. In meeting this objective, many department piers and bulkheads were explicitly experimental. One persistent design problem in piers supported by wood piles was the rapid decay of members above mean low water. In what was then a marine environment free of wood-eating organisms, Port of New York piles were virtually permanent if submerged. Beginning in 1902, the department began replacing wooden pier decks with partial concrete decks, to reduce the heavy maintenance costs created by moisture penetrating the decks. Chief Engineer Charles Staniford, who worked in the department from 1888 to 1918, led these efforts. The South Brooklyn piers were the first pile-supported structures in the port with all-concrete decks. The combination of wood and concrete developed by 1909 was considered a cost-effective means of avoiding concrete piles or solid-fill substructures, as was initially proposed for South Brooklyn in 1906 (Van Buren 1874; Hoag 1905a, 1905b; Department of Docks and Ferries 1907-19; Staniford 1914; Raber, Flagg, Antici, and Wiegand 1984: 44, 65-6).

With relatively minor variations discussed below, all five South Brooklyn piers followed a common design. The most important new features were 10.5-inch-thick reinforced concrete decks laid directly on wooden pile substructures, which included transverse pile rows 10 feet apart with 6x12-inch clamp timbers on either side of shouldered and tenoned pile heads immediately below the deck. Wooden templates over each pile row supported the steel deck reinforcement, and acted as parts of the forms for concrete slabs poured in place without expansion joints or other treatment (Staniford 1914: Figures 3 and 4). More details on design appear below in Part II. The department's leadership in waterfront engineering was such that a number of private projects used very similar designs prior to World War I, including piers built by the Central Railroad of New Jersey at Communipaw, the U.S. Lighthouse Board on Staten Island, and the Brooklyn Navy Yard (Staniford 1914: 520; Railway Age Gazette 1913).

Although successful, the clamped-pile deck support doubled the number of timber pile caps (despite halving the cap sizes from 12x12s), and required additional work on the pile heads. The design thus exhibited a somewhat costly conservatism which often characterizes evolving construction technologies. Within a few years, the department realized that reinforced concrete decks could be laid equally well on 12x12 pile caps without shaping the pile heads: the municipal piers at Stapleton, Staten Island were erected c1918-20 in this manner (Engineering News-Record 1920). For regional pier design, then, the South Brooklyn piers represented a transitional but important phase.

D. Overview of Terminal History

The city leased the piers to a variety of firms for traditional break-bulk cargo handling, which by the 1960s was becoming increasingly obsolete in the face of containerized shipping. Firms leasing the 29th Street Pier included U.S. Steel (1916-36), the Isthmian Steamship Company (1936-c1952), the Isbrantsen Company (c1952-1962), Teakwood Terminal Corporation (1960s), and Prudential Lines (1970s-c1982) (Department of Docks and Ferries 1907-19; Department of Docks 1920-1941; Department of Marine and Aviation 1942-1966; Army Corps of Engineers 1926, 1932, 1942, 1953, 1965, 1978). The relatively recent dates of pier construction, and the prolonged if gradual decline of port traffic beginning before World War II, did not encourage many changes to the piers after original construction. Each of the piers probably had one program of in-kind rehabilitation, plus minor repairs and modifications: the 29th Street Pier received additional fire protection c1951-52, and was repaired and slightly altered c1958-60 (see Part II; cf. Raber 1986 on 31st Street Pier).

The Department of Docks and Ferries or its successors made few improvements to the adjacent upland, on which new warehouses were originally contemplated in 1906 (cf. Figures 2 and 3). During World War I, the U.S. Navy Supply Bureau commandeered the piers at 33rd and 35th streets, and built two concrete warehouses on the upland between 30th and 33rd streets. Other city agencies built warehouses near the south end of the terminal (Figure 3). Stevedoring tenants and the Works Projects Administration also built a number of small wood and metal storage buildings on the terminal upland c1935-38. The use of these upland structures is poorly documented. The Department of Marine and Aviation (once the Department of Docks) built an upland concrete-and-steel terminal building for the Isbrantsen Company immediately inshore of the 29th Street Pier c1959-60, and a smaller structure near the 35th Street Pier at about the same time (Department of Marine and Aviation 1957-59 [plans]; Department of Ports and Trade n.d. [plans]).

Until the early 1970s, the city continued to build or repair break-bulk handling facilities, due in part to opposition by waterfront unions to containerization. When the city finally attempted to create competitive container facilities c1972, it contracted privately for creation of a terminal between 29th and 50th streets, encompassing city piers as well as Bush Terminal, acquired by the city in 1971. The contractor, Northeast Marine Terminal Company, removed the 30th Street Pier and filled over the site, razed all remaining pier-sheds except the one at 29th Street, filled over and combined the 33rd and 35th street piers into a new 35th Street Pier with container-handling equipment, and leveled most upland structures, before going bankrupt in 1980. International Terminal Operators (ITO) took over the terminal in 1982, by which time the 29th Street Pier was too structurally unsound for pier-shed use. Prudential Lines was using the north side of the pier for barge tie-up. At about this time, the inshore four bays of the pier-shed were removed, probably as part of United Parcel Service's (UPS) use of the upland building adjacent to the pier. ITO continued operations at the renamed South Brooklyn Marine Terminal, with no additional improvements of any magnitude (Figure 1; AERIAL VIEW TO SOUTHEAST; Basil Engineering Group 1982; Flagg and Raber 1986).

Part II: Descriptive Information

A. 1988 Conditions

Although deteriorated, the 29th Street Pier was the most intact original component of the South Brooklyn Freight Terminal in 1988. The substructure of the 30th Street Pier, and all other pier superstructures, were removed in the 1970s, while the substructures at 33rd and 35th streets were filled over and reused as a container-handling facility. Further changes to the original waterfront included placement of fill between the piers at 29th and 31st streets for additional parking. Most upland structures outshore of Second Avenue were also removed, although the c1959-60 building adjacent to the 29th Street Pier remains as a UPS facility. This 160x475-foot structure is steel framed and a high single story, sheathed with aluminum on its long sides, and with brick on its short facades with stepped roof lines. Fiberglass panels cover the roof (AERIAL VIEW TO SOUTHEAST; Department of Marine and Aviation 1957-59 [plans]).

Most of the 29th Street Pier substructure is intact, with many visible repairs to piles and braces. The outermost 25 feet and the apron along the northeast side of the shed have been removed, and much of the opposite, extended apron has collapsed. The deck surface remains intact, with a badly weathered underside on which much reinforcement is exposed. The inshore piershed facade, and the innermost four bays with office spaces, have been removed. The outshore facade survives, but is largely obscured under galvanized sheet metal. Office spaces behind this facade have been removed. Most other superstructure elements remain, but the sliding and lift doors are inoperable and in some places disarticulated, and the sheet metal siding is missing above some doors (cf. 1988 photographs and photocopies of drawings).

B. Original Construction, and Variations Among Terminal Piers

Smallest of the South Brooklyn Freight Terminal piers, the substructure at 29th Street was originally 1198.75 by 80 feet, supporting a shed about 1176 by 72 feet. The innermost 1159 feet of substructure consisted of transverse pile rows 10 feet apart, with most piles spaced about 5 feet apart within rows except under central sections as noted below. Two 6x12-inch clamp timbers on either side of shouldered and tenoned pile heads in each row supported a 10.5-inch-thick reinforced concrete deck. A 2.25-inch-thick asphalt coating covered the deck within the piershed. The deck surface was finished off about 9.86 feet above mean low water. The outermost 39.75 feet of substructure consisted of two double-pile rows with piles spaced about 2.5 feet apart within rows. Designed to withstand ship impacts rather than to handle much cargo, the outermost section's clamped pile system supported 12x12 longitudinal timbers or rangers and a concrete deck only 6 inches thick. Solid walls of 6x12, 4x10, and 5x10 timbers ran across the two outermost pile rows above mean low water (OUTSHORE ELEVATION TO SOUTHEAST; DETAIL OF SUBSTRUCTURE AT END OF TRACK SUPPORTS; DETAILS AND GENERAL DECK PLAN; SECTIONS AND METHODS OF REPAIR).

SOUTH BROOKLYN FREIGHT TERMINAL: 29TH STREET PIER
(Isbrantsen Pier)
HAER No. NY-203 (Page 9)

The clamped pile system created a 6-inch space between the clamp timbers, filled with 6x10-inch timbers to leave 2x6-inch recesses. Wooden templates in each recess supported steel deck reinforcement, and acted as parts of the forms for concrete slabs poured in place without expansion joints or other treatment. The slabs acted as simple beams between pile rows. A lower clamping system in the center of the innermost 110 pile rows supported four 5x12-inch track stringers set in the concrete deck for nearly the full pier length, to support anticipated double-track railroad connections. Each stringer rested on a concrete encased, vertical steel I-beam 15 inches long, with the beams in turn supported by steel plates bolted to clamping timbers. Longitudinal 6x12 timbers, not installed at the other four piers, ran under the lower clamping system at 29th Street. The track stringers were removable, intended for replacement with T-rails flush with the deck surface. Only the 33th Street Pier had the rails installed, however, with connections to the Bush Terminal Railroad along Second Avenue, while the other piers retained the timber stringers (DETAIL OF SUBSTRUCTURE AT END OF TRACK SUPPORTS; SECTIONS AND METHODS OF REPAIR; Figure 3; Staniford 1914; Army Corps of Engineers 1926, 1932, 1942, 1953, 1965).

Except for the clamped pile system, the substructure was typical of wooden piers developed in the Port of New York after the mid 19th century. The concrete firewalls, installed above mean low water at the 31st, 61st, and 91st pile rows from the bulkhead, were consistent with design of better-built piers by World War I. Special features of the deck or superstructure were supported by varying the number or placement of piles within pile rows. At the South Brooklyn piers, clusters of four piles in alternate pile rows supported the concrete piershed column pedestals on the deck. All piers at this terminal except the one at 29th Street had four such pile clusters in the foundation rows to accommodate three-bay sheds; the narrower 29th Street Pier shed has no interior columns, and thus lacks these clusters except at the ends of foundation rows (DETAIL OF COLUMN SUPPORT AND FIREWALL; SECTIONS AND METHODS OF REPAIR; Staniford and Guise 1912; Staniford 1914; Raber, Flagg, Wiegand, and Antici 1984: 65-70).

Each South Brooklyn deck, designed for loads of 500 lbs./sq. ft., was of 1:2:4 portland cement with a crown of about 8 inches to shed water, and met the in-shore bulkhead by resting unattached on a horizontal plane joint which allowed for deck expansion or contraction during temperature changes. Two rows of manholes provided hose access for fighting fires in the substructure. The 31st Street Pier deck surface was experimental in its lack of the protective asphalt covering which the Department of Docks and Ferries had been using on partial concrete deck piers for several years; after observing surface wear, the department had asphalt placed on the decks of the other four South Brooklyn piers, leaving the 31st Street pier uncoated as built (Staniford and Guise 1912; Staniford 1914; Army Corps of Engineers 1926, 1931, 1942, 1953, 1965).

With a single transverse bay, the piershed at 29th Street was narrower than the three-bay sheds on the other piers but was otherwise of similar design. At 20-foot intervals, 17-inch I-beams rising from alternate pile rows supported trussed transverse bents, braced and connected longitudinally with 20 feet of headspace above the decks. The trusses carried 10-inch channel purlins beneath tar-and-slag-covered spruce roof boards. Corrugated steel sheets in every eleventh transverse truss provided some fire protection. Pairs of skylights penetrated each 20-foot roof section, in a staggered array. Steel, 24-inch-diameter ventilators punctuated the roof peak at 40-foot intervals; 5-inch leaders drained the roof at 60-foot intervals. Galvanized steel siding covered the long sides above door openings. The short outshore and inshore facades had ornamental galvanized crimped or corrugated iron over structural steel, with some cast iron and boiler plate elements. Each end facade was divided into three bays by modified Doric pilasters, with the bays filled with sash windows, man doors, and truck doors. Pediments capped by flagpole-bearing akroteria, with lettering announcing the street location of each pier, completed original end facade decoration. The limited decorative elements were typical of municipal piers built c1910-20 (PIERSHED INTERIOR; GENERAL PLAN; CROSS SECTION; END ELEVATIONS; cf. Staniford and Guise 1912).

Except at 29th Street, alternate longitudinal bays had 20 foot square, horizontally sliding doors of sheet-metal-covered white pine frames. The 29th Street Pier was built with doors in each bay, every third door being a chain-operated, two-section lift type. Slightly bent channel iron pieces above each lift door retained the upper and lower door sections when open. All 29th Street cargo doors were framed in spruce or yellow pine, and covered by galvanized crimped steel on the outside. Each sliding door had two equal sections, guided along the pier deck by beveled 3x8 planks; sliding doors could move in front of lift doors as needed. The original deck or apron extended about 4 feet from the doors on each long side of the pier (PIERSHED DOORS AND COLLAPSED DECK EXTENSION; DETAIL OF PERSHED DOORS, DETAIL OF COLUMN SUPPORT AND FIREWALL; PERSHED INTERIOR; CROSS SECTION; SIDE ELEVATIONS AND DETAILS).

Break-bulk cargo handling required block and tackle, rope, cargo masts on ship or piershed or both, and, in the 20th century, winches. The piershed at 31st Street had 15 cargo masts on each side at 100 foot intervals, used with portable electric winches to handle cargo. Some time after initial construction, 24 such masts were added to each of the north sides of the 33rd and 35th street piers. No such masts were installed at 29th Street, meaning that most handling here required use of ship cargo masts. To minimize piershed damage during transshipment, 4x8 yellow pine fender timbers were bolted to the outer shed surface above the doors (DETAIL OF PERSHED DOORS, DETAIL OF COLUMN SUPPORT AND FIREWALL; SIDE ELEVATIONS AND DETAILS; Staniford and Guise 1912; Army Corps of Engineers 1926, 1932, 1942, 1953).

There were small, poorly documented office spaces at the inshore and outshore ends of the piershed. All these spaces were removed by 1988 (GENERAL PLAN). All water and electrical utilities for the offices, associated toilets, and the incandescent lights suspended from the roof trusses were supplied by municipal services from the upland.

C. Later Modifications

Until the 1950s, the only documented changes at the 29th Street Pier were relatively minor repairs and modifications made by shipping tenants. The most important modification in this period was Isthmian Steamship Company's c1942 replacement with concrete of the timber stringers originally set in the deck instead of tracks. As part of a general fire prevention program at city piers in the early 1950s, the Department of Marine and Aviation installed additional concrete firewalls in the 15th, 45th, 75th, and 105th pile rows from the bulkhead, and a dry sprinkler system with insulated fire lines (DETAILS AND GENERAL DECK PLAN; Department of Marine and Aviation 1942-1966; Department of Ports and Trade n.d. [plans])

Between c1958 and 1960, the department and its tenant, Isbrantsen Company, made the only substantial improvements to the pier. These included general repairs and rehabilitation of the substructure and shed, and addition of a 16-foot-wide apron to the southwest side of the deck. This wider apron was probably built to accommodate forklifts or other wheeled mechanical equipment. The approximately 10-inch-thick concrete apron extension rested on pile rows extended from the original substructure, but with piles at about 5-foot centers. The apron extension was built immediately adjacent to the cargo doors, and involved removal of the outermost bearing pile and fender pile in each row on this side, along with the original apron and the timber door guides. To replace the door guides, an 8.5-inch wide, 2-inch-deep channel was excavated in the original concrete deck, abutting the outer edges of the shed columns, and lined with 1-inch-thick angle iron (PIERSHED DOORS AND COLLAPSED DECK EXTENSION; DETAIL OF PIERSHED DOORS; Department of Marine and Aviation 1957-59 [plans]; Department of Ports and Trade n.d. [plans]; Driver 1959 [plans]).

Not all plans made at this time were completed. Instead of the planned rehabilitation of the outshore facade, Isbrantsen evidently covered much of this end with corrugated metal and painted its name in the former pediment space. It is also not clear if the department's executed its planned rebuilding of part of the outer end of the deck (OUTSHORE ELEVATION; Department of Marine and Aviation 1957-59 [plans]). There is no apparent documentation of later removals of pier and shed components after c1978, including the northeast apron, the outermost 25 feet of deck, and the inshore four shed bays.

Part III: Sources of Information

Plans and Drawings

No original drawings of the 29th Street Pier appear to survive at the New York City Department of Ports and Trade, which is the only known repository of such material for city-built piers. Later plans, cited below, include information on original conditions as well as modifications. All plans cited are on file at department offices, Battery Maritime Building, 1 Whitehall Street, New York, NY 10004.

Department of Marine and Aviation, City of New York

1957-59 Files for this department, now the Department of Ports, International Trade, and Commerce, include cards noting at least a dozen contracts planned for the 29th Street Pier between 1948 and 1972. Files or drawings for some of these contracts are missing, or were never prepared, and examination of the pier and other documentary data indicate that some contracts were never executed. Most surviving drawings located for this documentation date to c1957-59. The similarity of some of these drawings to published drawings of other South Brooklyn Freight Terminal piers suggests that the later drawings of the 29th Street Pier were based on original ones of c1915. Two contract files, partially reproduced in photocopies for this documentation, are useful in portraying apparent original conditions as a basis for modification. Asterisks denote drawings photocopied.

Files 2525-26, Contract 2994, Rehabilitation of 29th St. Pier, Gowanus Bay. Three drawings dated November 25, 1957, one missing:

1. Sections and Methods of Repair*
2. Details and General Deck Plan*
3. Pile Plan

File 2702, Contract 3049, Rehabilitation of Piershed at Foot of 29th Street. Six drawings dated January 20, 1958:

1. General Plan*
2. End Elevation*
3. Cross Section*
4. Side Elevations and Details*
5. Front Framing*
6. Alteration of Standpipe System

Department of Ports and Trade, City of New York

n.d. Permit files, c1928-present with indices, include plans of repairs or modifications planned by tenants at the 29th Street Pier. Permits of interest for this documentation include 1458a [currently missing] for 1942 removal of the timber stringers on the deck, and 4515a for the 1959-60 widening of the southwest side of the pier.

Driver, Leroy E., Associates

1959 Pier - Foot of 29th St./Gowanus Bay, Brooklyn, N.Y./Isbrantsen Co., Inc./Substructure Extension/South Side. 2 drawings.

Historic Views

No historic views focussing on the 29th Street Pier were located in the Department of Ports and Trade, City of New York Municipal Archives, South Street Seaport Museum, or other sources used for this documentation. The pier appears in a good, if small-scale, published view of the Gowanus Bay area in Army Corps of Engineers 1926 and 1932.

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Unpublished Sources

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Flagg, Thomas R., and Michael S. Raber

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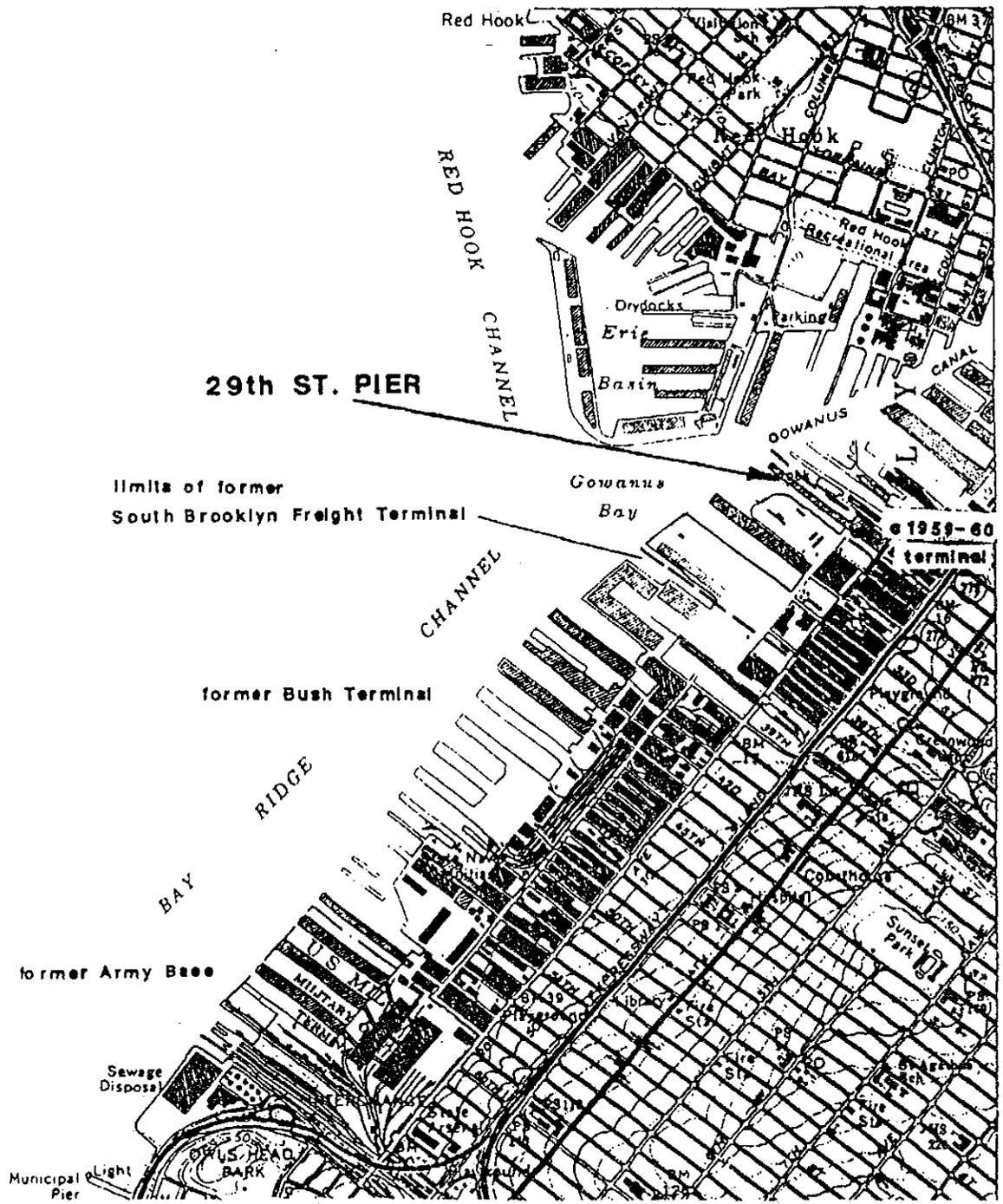


Figure 1. LOCATION OF SOUTH BROOKLYN FREIGHT TERMINAL AND 29TH STREET PIER
base map: Jersey City U.S.G.S. quadrangle sheet

SOUTH BROOKLYN FREIGHT TERMINAL: 29TH STREET PIER
 (Isbrantsen Pier)
 HAER No. NY-203 (Page 17)

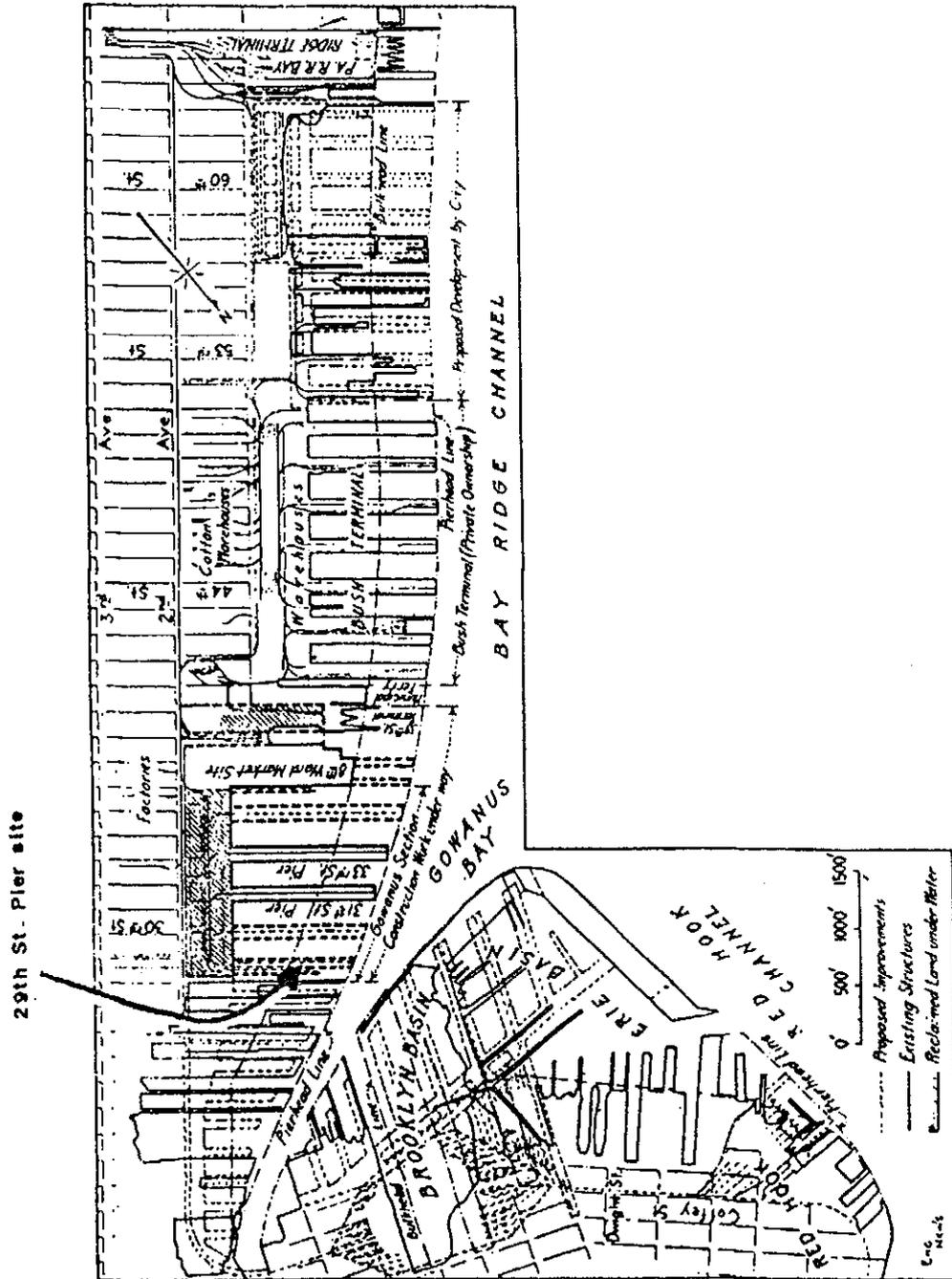


Figure 2. SOUTH BROOKLYN MUNICIPAL WATERFRONT PLAN, PROJECTED IN 1906
 source: Staniford and Guise 1912

SOUTH BROOKLYN FREIGHT TERMINAL: 29TH STREET PIER
(Isbrantsen Pier)
HAER No. NY-203 (Page 18)

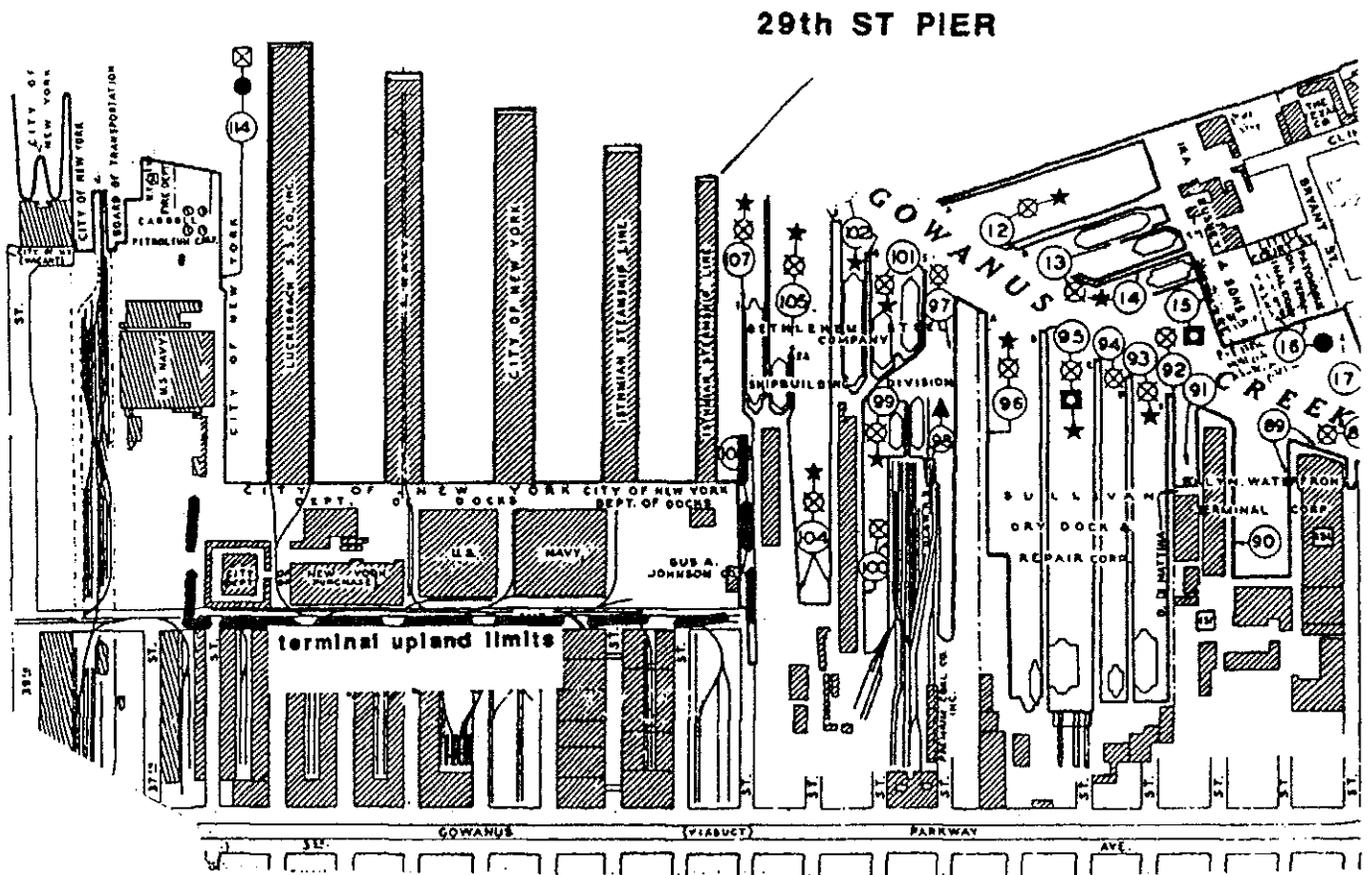


Figure 3. SOUTH BROOKLYN FREIGHT TERMINAL AND ENVIRONS c1942
source: Army Corps of Engineers 1942