

CONNECTICUT STATE PIER
State Pier Road at Thames River
New London
New London County
Connecticut

HAER No. CT-141

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

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HISTORIC AMERICAN ENGINEERING RECORD

CONNECTICUT STATE PIER

HAER No. CT-141

Location: State Pier Road at Thames River, New London, New London
County, Connecticut

USGS New London Quadrangle
UTM Coordinates: 18.743400.4582400

Date of
Construction: 1914

Engineers: Waldo E. Clarke and William T. Donnelly
Contractor: T. A. Scott Company

Present Owner: State of Connecticut
Department of Transportation
2800 Berlin Turnpike
Newington, Connecticut 06131-7546

Present Use: Not in use

Significance: The Connecticut State Pier is significant as a typical example of early 20th-century pier engineering and as one of the earliest attempts by the state government to encourage economic development by means of a major public improvement. It was built with the hope that substantial shipping would result from the pier's access to the Central Vermont Railroad, which connected with major lines in the Midwest and Canada. While only a modest success economically, the pier provided an important port facility to the United States Navy in both world wars.

Project
Information: This documentation was undertaken in accordance with a Memorandum of Agreement between the Economic Development Administration and the Connecticut State Historic Preservation Office. The pier is scheduled to be substantially rebuilt in 1995.

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Description

The Connecticut State Pier is a large earth-filled and timber-pile pier jutting out into the Thames River at the northern end of New London's downtown waterfront. Dating from 1914, it measures 1,020 feet long and 200 feet wide, with a wood-framed two-story warehouse, 822 feet by 183 feet in plan and 30 feet high, occupying most of its surface area. The area surrounding the State Pier is one of storage tanks, warehouses, and rail yards, with residential neighborhoods just to the north. State Pier Road provides truck access to the pier, and the Central Vermont Railroad connects with the two tracks that lead in through the north end of the warehouse.

The central portion of the pier, 100 feet in width, is a filled section contained by rubble masonry walls, 8 feet thick at the base and 9 feet high, which in turn rest on concrete girders bearing on timber piles sunk into the river bed. The resulting enclosure was filled with material dredged to form slips on either side of the pier; the slips are 135 feet wide and provide a depth of 33 feet at low tide. Surrounding the filled portion and extending out another 50 feet on all three water sides is a timber-pile structure consisting of 14" creosoted yellow-pine piles spaced six feet apart. The piles are braced horizontally with 6" x 12" timbers and diagonally by 4" x 12" timbers. Along the outside, there is a fender structure consisting of an additional set of white-oak piles spaced six feet apart, connected above the water by two horizontal 10" x 10" timbers. Between each pair of piles, the horizontal members are braced by two additional uprights of similar dimension. The rounded outside corners of the pier are further protected by a solid row of piling.

The outer six feet of the pier's deck is composed of 8-inch-thick yellow-pine planking. The rest of the pile structure is decked with precast reinforced concrete floor units 6 feet wide and varying in length from 6 to 24 feet. Although covered by an asphalt wearing surface, the deck units were meant to be removable in order to facilitate pile replacement.

The warehouse structure consists of a 100-foot-wide two-story central portion, positioned directly over the masonry-walled filled core of the pier, with one-story sheds on each side measuring 44 feet wide by 480 feet long. An additional shed appended to the east side incorporates a portion of the first structure on the pier, which was built in 1916 especially for

the German cargo submarine Deutschland. The central two-story portion has a "butterfly" roof pitched toward the center of the building, while the side portions have low-pitched shed roofs. Huge metal-clad sliding doors occupy each of the 21 side-shed bays and alternating bays on the exposed sides of the central portion. Windows in the other first-story bays, and the two tiers of second-story windows, consist of small-pane steel industrial wire-glass sash with central pivot sections. The end elevations each have two large sliding metal-clad loading doors, with additional openings for two railroad tracks on the north side. The exterior of the warehouse is covered with diamond-shaped asbestos shingles, with the exposed surfaces of wooden framing members encased in sheet metal. The building is devoid of ornamental detail, except for a small stepped parapet on the north end, which bears the words "State Pier No. 1."

The interior plan of the warehouse is bilaterally symmetrical about the two railroad tracks that run the entire length of the building. The tracks are recessed so as to bring the floor of boxcars to the level of the warehouse's concrete floor. A firewall separates the two tracks, with sliding door openings spaced along its length. The first-floor interior is further partitioned longitudinally between the center portion and the side sheds and transversely into thirds by two elevator and stairway cores. Interior partitions and walls are covered with asbestos board. The second floor lacks the longitudinal partition and is open to the roof trusses.

The warehouse's interior framing consists of conventional heavy posts and beams on the first floor, with the second-floor uprights consisting of three lighter members, a center post with two diagonals. On both levels the uprights rest on concrete pedestals about two feet high. Roof trusses are Howe-type structures consisting of timber diagonals with iron-rod verticals. Roof decks and the second-story floor are of plank construction.

Relatively little remains of operating machinery or fixtures. Spaced along the perimeter of the pier are iron mooring posts in the form of large cleats, and there are occasional firehose pipes as well. The building is sprinklered throughout. Of materials-handling apparatus, all that remains are two welded-steel hand trucks, an iron-wheeled pallet truck, and a two-ton portable scale marked "Howe, Rutland, Vermont."

The only substantial significant component that is no longer extant at the State Pier are the unloading structures that formerly stood on the roofs of the side sheds. These tall angle-iron braces supported a double rail the length of the sheds, along which ran an attaching point for a cable-operated cargo hoist, the other end of which was secured to a mast on the vessel waiting to be loaded or unloaded. Although one prospective drawing for the hoist shows the motor and winding drums travelling on an interior bridge crane within the second story of the warehouse, no evidence for such a bridge crane exists. Instead, the hoist was probably powered from movable machinery on the deck of the pier, as was common in the period. The hoist structures appear to have been removed about 1940. Also no longer in evidence are the railroad tracks that formerly ran along the outside of the central portion and served the side sheds.

There are two buildings of modern construction to the north of the warehouse: a one-story storage building covered with corrugated-metal siding, and a small concrete-block storage shed. The property also includes a large water tank on a steel skeleton tower north of the pier, probably constructed in 1920 after additional funds for installing the sprinkler system were appropriated.

The State Pier is presently in a deteriorated state. Marine borers are consuming the timber piles, and a large part of the floor in the west side shed has collapsed into the water.

Technological Significance

The Connecticut State Pier represents a typical example of early 20th-century American pier engineering, incorporating the characteristic design and materials of that period. American pier engineering was heavily influence by the negative example of New York harbor, which had hundreds of small, narrow piers crowded together, affording only haphazard access to railroad and warehouse facilities. In building new facilities such as that at New London, engineers attempted to avoid many of these deficiencies.

The dimensions of the Connecticut State Pier, for example, were chosen to allow it to accommodate on each side two ships of the then-common length of 500 feet, as well as handling single vessels up to 1,000 feet in length, and it was made wide enough to accommodate a double railroad track down its

length. The angle of the pier allowed ships to approach it from the Thames River's dredged channel with minimal turning, and it was far enough away from adjacent facilities so that ships could depart without requiring other vessels at the pier to be moved. The pier was originally envisioned as the first and largest of a set of three widely spaced piers at this location.

The pier was also designed with an up-to-date approach to materials handling. By having the railroad tracks recessed, box-cars could be unloaded at the warehouse's floor level, and by running them the full length of the pier (with two crossovers), the entire warehouse was given ready access to the tracks. Although by European standards and modern practice, the lack of a traveling crane would be viewed as a deficiency, the use of cargo hoists instead of cranes was common in the period. Such structures, known as "New York hoists," were developed for that city's narrow piers, where there was no room for a crane. Although such hoists usually required two operators (one on the pier and one on board to work the ship's winding drum), such an arrangement could unload a ship fully as fast as a crane. Since almost all materials in this period were shipped in bales, crates, or on skids, the 4-ton capacity of the hoist planned for New London was more than adequate.

In its materials and design, the warehouse itself represents what was then modern pier engineering practice. Heavy timber framing, especially when protected by asbestos exterior shingles and asbestos-board walls, was the most fireproof method of construction available in that period other than reinforced concrete. Steel-framed warehouses performed poorly in fires. The heat deformed the metal severely unless the members were coated with a fireproof material, and the application of fireproofing by spraying it on had not been perfected yet. The engineers of the State Pier originally contemplated building a reinforced-concrete warehouse (with the outside walls bearing on the masonry core) and installed heavy footings for that purpose when the core was filled. The change in plans that resulted in the present wood-framed structure probably stemmed from the war-time scarcity of reinforcing steel, as well as lower construction costs. When combined with interior sprinklers and numerous exterior connections for fire hoses, a wood-framed warehouse like that at the State Pier had a better than average chance of withstanding the disastrous pier fires that occurred with regularity in the period.

Having the warehouse on the pier allowed the integration of loading and warehousing, functions that were generally separated in older, larger ports. Typically, piers had only small-capacity buildings, called transit sheds, that stored a ship-load of goods until they could be moved to an onshore warehouse, a process that often required the cargo to be moved to a railroad siding, where it would be loaded into cars for a short haul to the warehouse and unloaded again. Combining the transit sheds and warehouse into a single structure offered the potential of greatly reducing the handling of freight, as long as the amount of goods and duration of storage were not excessive.

The Connecticut State Pier received considerable attention in engineering journals of the period, and the project was described in some detail in Greene's Wharves and Piers (1917). In addition to the features noted above, these accounts took note of the engineers' calculation of the costs of timber-pile construction for the outer portion, compared with steel or concrete piles. Although the life of the timber piles was thought to be less than that of the other two more costly methods, the economic life of the structure was calculated at only 25 years, after which time improvements in materials handling might well render this portion obsolete. The use of the concrete floor units was also regarded as innovative.

The design of the pier was a collaborative effort by resident engineer Waldo E. Clarke and consulting engineer William T. Donnelly. Both men signed all drawings and appear to have had equal roles in developing the overall concept. Donnelly had the greater experience in marine engineering, but as the local engineer on the scene, Clarke may be credited with the Connecticut State Pier's particular details. Both men individually published articles in professional journals describing the pier project.

William T. Donnelly (1863-1936) was a highly regarded marine engineer in that period. The child of Irish immigrants, he received no formal education in engineering but rather learned on the job in positions that made use of his mechanical aptitude. As a teenager, he worked in the design department of R. Hoe, a New York City manufacturer of printing presses, and later worked as a designer of specialized machinery for the Campbell Printing Press Company of Taunton, Massachusetts. He then was a partner in the New York engineering firm of Faber, DuFour & Donnelly from 1897 until 1907, when he went into practice on his own. Over the course of his career he

designed 26 major dry docks, and he received 11 patents for innovations in dry-dock details. He also proposed a way of transporting coal as a slurry in pipelines, and he patented a method of making ships unsinkable that involved loading the cargo into buoyant containers. The latter scheme was actually tested during World War One, when the Lucia remained afloat for 22 hours after being torpedoed, despite the fact that she was only partially loaded with Donnelly "buoyancy boxes." In addition to his work for the Connecticut Rivers and Harbors Commission, Donnelly had a wide-ranging practice as a consulting engineer, counting as his clients the Grand Trunk Pacific Railway of Canada, the Inter Island Steam Navigation Company (Hawaii), and the Alabama Harbor Commission.

Waldo E. Clarke (1882-1953) received his engineering education from New York University, from which he graduated in 1906. He served a brief term as New London City Engineer in 1908 and then worked as a construction engineer for the United Fruit Company in Panama. His appointment as resident engineer of the State Pier project in 1912 appears to have been his first major responsibility. Following completion of the superstructure in 1917, Clarke then became superintendent, a position he held under various titles and operating entities until his death. Clarke was a prominent man in New London, serving two years as mayor and thirty years as a member of the Finance Board. He was active in the local Chamber of Commerce and other civic organizations and was instrumental in bringing the Coast Guard Academy and Connecticut College to New London.

Historical Background

The construction of the Connecticut State Pier came about largely through the efforts of Bryan F. Mahan, the affable and energetic mayor of New London. Mahan was lawyer and real estate developer and a tireless promoter of parks, sidewalks, and economic development projects that would benefit his home city. Largely through his efforts, the State Legislature approved a commission in 1909 to study whether state-funded harbor projects would promote Connecticut's economy. After studying numerous harbors in Europe, the commission cited New London as one of the sites that would benefit from improved port facilities and recommended a permanent commission to carry the process forward. The legislature in 1911 did make the commission permanent (Mahan by then was in State Senate as well as retaining his position as Mayor of New London), giving

it the power of eminent domain and \$1 million to begin work in New London.

The economic justification for the State Pier was that sugar, hides, and other products bound for eastern Canada would be shipped in via New London, with Canadian grain as the primary export. (The pier's principal railroad connection is with the Central Vermont, which connects New London with Montreal, as well as with railroads serving the American and Canadian Midwest.) Although legislators from other parts of the state criticized the project as a pipedream, New Londoners had great expectations. The local newspaper headlined its editorial on the pier's approval "Cause for Great Rejoicing," and went on to predict

New London . . . is going to be a great deal larger before the census man comes around again and what is more desirable, it is going to be one of the busiest places in the state and one of the best in which progressive people could make their homes.

Just keep your eye on New London.

The pier itself was finished in 1914, with the work undertaken by the T. A. Scott Company, a local contractor. The warehouse took another three years but was complete by April of 1917. The concrete warehouse that the engineers anticipated was smaller than what was built (although the side sheds were about the same length). The piles for the footings for this structure were sunk at the same time as the pier itself, so in revising the plans for the larger, wood-framed warehouse, numerous additional footings had to be constructed.

The operation of the pier was given over to a private contractor working under the supervision of the Connecticut Rivers and Harbors Commission, an agency that eventually became the Waterways Bureau of the Department of Transportation. From 1919 to 1927 the pier was operated by the General Navigation Company and then for the next 50 years by the Connecticut Terminal Company, which employed Waldo Clarke as its general manager. The state allowed the operator 20% of the net profits.

During World War One the United States Navy took over the pier and used it for military operations. After the war the pier enjoyed several years of prosperity, as large amounts of cargo were shipped to the still-recovering countries of Europe. The state undertook further enhancements, including an

appropriation of \$60,000 for better road access, \$50,000 for electric lighting, and \$47,100 for improvements to the sprinkler system, which originally relied only on the city water system for its pressure. By 1924, however, the volume of cargo at the pier had decreased dramatically, in part because of European recovery and in part because Canadian ports had lobbied against the railroad's use of New London for exports.

The pier averaged about one ship per week in the period between the wars, with wood-pulp imports and canned goods from intercoastal shipping making up a large part of the cargoes. During the Depression the Terminal Company went through a reorganization, but otherwise the pier had a steady though unspectacular existence. In the 1970s, the volume handled by the State Pier varied between a low of 21 vessels (29,822 tons) in 1977-1975 to 51 vessels (120,694 tons) in 1976-1977. The United States Navy used the pier again in World War II, acquiring the use of the east side under a long-term lease. Until recently, the Navy berthed submarines and a submarine tender on the east side of the pier.

The failure of the State Pier to live up to its promoters' rosy forecasts was more due to economic considerations than to any technological deficiency. Although today the use of both self-unloading bulk carriers and container ships limit the State Pier to particular types of cargoes, in its day most materials were shipped crated, on skids, or in bales and so could be handled by the pier. However, the State Pier had two serious drawbacks. First, New London's imports always greatly outweighed its exports. This meant that ships bringing cargo to the pier had to leave empty and pick up their return cargo in another port. Ship owners wanted to minimize empty sailing and so favored ports with well-balanced import and export streams. Second, the Pier was tied to a single railroad company. Although New London was served by another large carrier, the New York, New Haven, and Hartford Railroad, that line did not connect directly with the pier. Moreover, it had little incentive to make such a connection, since as southern New England's major rail line, the New Haven, as it was known, serviced numerous other ports, including Boston and New York. Since the Central Vermont Railroad was owned by Canadian interests, the State Pier had its fortunes tied to a company more likely to respond to the needs of Canadian ports than New London's.

Despite its lackluster showing as an economic-development engine, the Connecticut State Pier must be reckoned as an historically significant structure. Built at a time when Connecticut's state government was only beginning to undertake highway improvements, the State Pier represented a tremendous public investment in infrastructure. Although there had been ample precedent in the Federally funded dredging of harbor channels for Connecticut's ports, the Pier was Connecticut's first sizeable state-funded transportation facility.

BIBLIOGRAPHY

- "Cause for Great Rejoicing." New London Day, July 27, 1911.
- Clarke, Waldo E. "Connecticut's Steamship Terminal at New London." Proceedings of the Connecticut Society of Civil Engineers, 1915: 57-68.
- _____. "Connecticut Shipping Terminal at New London." Engineering News 74 (November 25, 1915): 1028-32.
- Clarke, Waldo E. Obituary. New London Day, May 18, 1953.
- Connecticut Department of Transportation. Bureau of Waterways. Historical Background of Connecticut State Pier and Description of Activities With Lease Pier Operators. Wethersfield, Conn., 1978.
- Connecticut Department of Transportation. Bureau of Waterways. State Pier Office, New London. Drawing and photograph files.
- Fairchild Aerial Survey. Aerial photographic survey of Connecticut, 1934. Connecticut State Library.
- Connecticut Rivers, Harbors, and Bridges Commission. Report, 1910, 1912.
- Connecticut, State of. Public Acts, 1919, ch. 286; Special Acts, 1911, SA 357; 1923, SA 250.
- Decker, Robert O. The Whaling City: A History of New London. Chester, Conn.: Pequot Press, 1976.
- Donnelly, William T. "New London Harbor Improvement Project." International Marine Engineering 19 (March, 1914): 93-95.
- "Donnelly, William Thomas." National Cyclopedia of American Biography. Volume 26. New York: James T. White, 1938.
- DuPlat-Taylor, Francis M. G. The Design and Maintenance of Docks, Wharves and Piers. London: E. Bern Ltd., 1928.
- Greene, Carleton. Wharves and Piers: Their Design, Construction, and Equipment. New York: McGraw-Hill Book Company, 1917.

BIBLIOGRAPHY (continued):

Marshall, Benjamin T. (ed.). A Modern History of New London County. New York: Lewis Publishing Co., 1922.

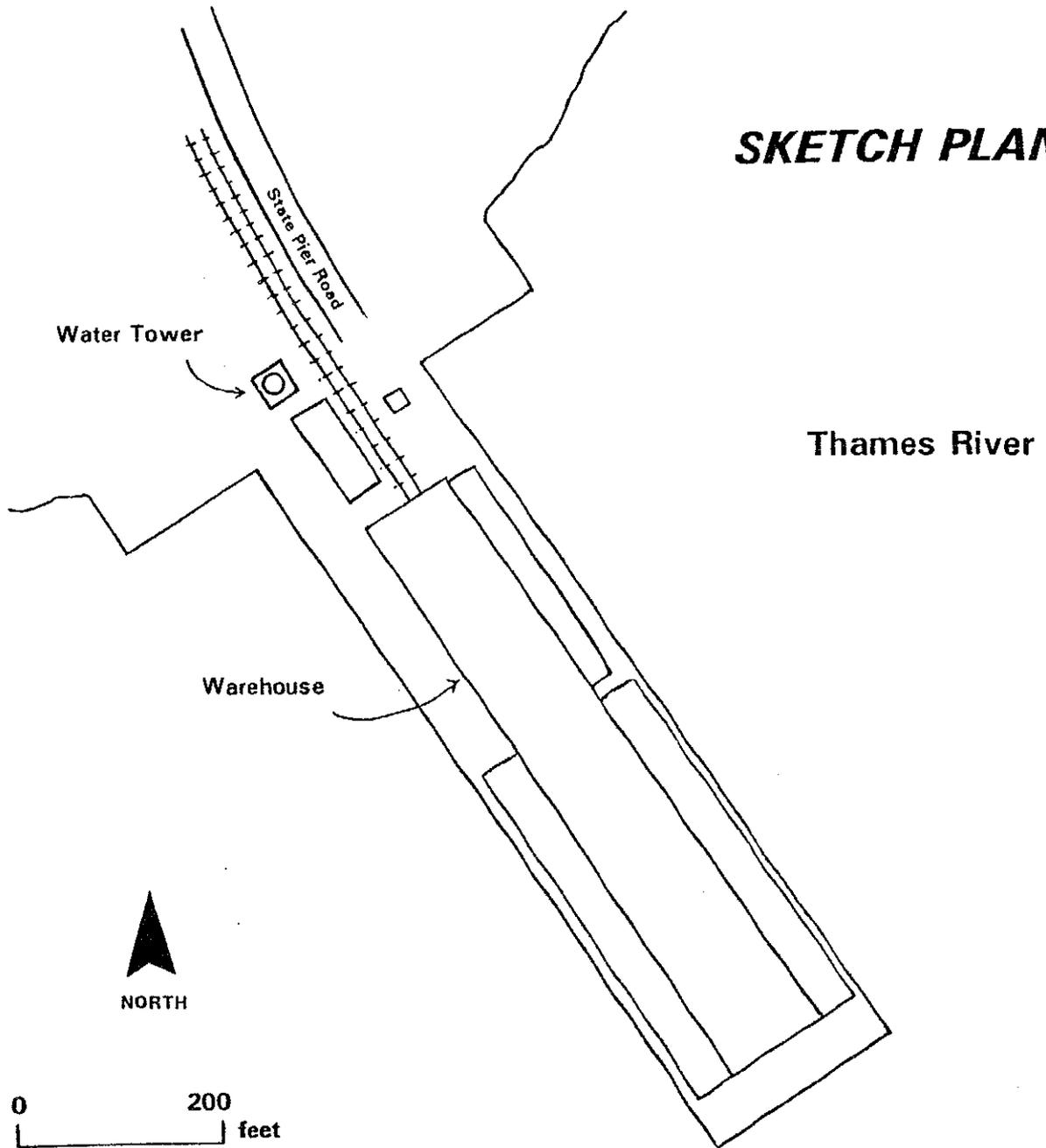
MacElwee, Roy S. Ports and Terminal Facilities. New York: McGraw-Hill Book Co., 1918.

Sanborn Map and Publishing Company. Insurance maps of New London, 1921, 1933.

U.S. Agriculture Department. Aerial photographic survey of Connecticut, 1951. Connecticut State Library.

Note on Drawings: The blueprint set of drawings at the State Pier office is incomplete. Although details of the pier itself appear to fairly represent what was built, there are no prints showing the warehouse structure, the additional pilings installed in connection with it, or the cargo hoist as actually built. These details do appear in 5" x 9" printed reductions from undated original 40'-scale plans, several sets of which are in the office.

SKETCH PLAN



Water Tower

State Pier Road

Thames River

Warehouse



0 200 feet

Approximate Scale