

U.S. NAVAL BASE, PEARL HARBOR, MARINE RAILWAY NO. 2
MACHINE HOUSE & SUBSTATION
(U.S. Naval Base, Pearl Harbor, Naval Shipyard, Facility No. 233)
Near intersection of Avenue G & Third Street, northwest of Dry Dock
No. 3
Pearl Harbor
Honolulu County
Hawaii

HABS HI-501
HI-501
HABS
HI-501

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDINGS SURVEY
PACIFIC GREAT BASIN SUPPORT OFFICE
National Park Service
U.S. Department of the Interior
1111 Jackson Street
Oakland, CA 94607

HISTORIC AMERICAN BUILDINGS SURVEY

U.S. NAVAL BASE, PEARL HARBOR, MARINE RAILWAY NO. 2 MACHINERY HOUSE AND SUBSTATION (U.S. Naval Base, Pearl Harbor, Naval Shipyard) (Facility No. 233)

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Location: Near the intersection of Avenue G and Third Street
Northwest of Dry Dock 3
Pearl Harbor Naval Base
City and County of Honolulu, Hawaii

This building falls within the UTM coordinates of the Pearl Harbor Naval Shipyard as defined in the location section of the overview report HABS No. HI-483. This building's UTM coordinates are: Zone 4 607480E 2361340N.

Significance: The Machinery House functioned as the winch for the Marine Railway No. 2, which was a repair cradle for Pearl Harbor. The Marine Railway No. 2, with its rails, cradle and superstructure of steel beams and steel girder cross members, was a breathtaking piece of work. The machinery house still has integrity but, unfortunately, its counterpart, the Marine Railway No. 2, has been demolished. It is associated with the expansion of the Navy Shipyard During World War II.

Description: The machinery house and substation are combined in a single reinforced concrete building, splinter proofed with a concrete roof slab. It is a permanent, one-story, concrete wall and roof building on a reinforced concrete foundation structure. A concrete block removable wall section on the south elevation (allows the winch to be installed) minimizes openings. Heavy footings that reach 7'-0" below the surrounding ground level were poured for the cradle-winch installation, which consists of a 500-horse power motor, heavy gear reductions, and specially designed drums for accommodating four hoist chains.

Facility 233 is a composite of two rectangles of different sizes, which forms the shape of an L. The two rectangles (sizes 46'-0" x 29'-6" and 30'-0" x 32'-6") abut one another and share a common central wall. The larger rectangle is the substation area and the other smaller rectangle is the winch area. The footprint measures 64'-0" long with one side being 46'-0" wide and the other side is 30'-0" wide. The foundation of the substation extends 5'-5" below ground level, while the winch house room is built on grade. There is a single entry portico at the crux of the L. There are two doors at this entry portico, one that enters into the winch room and one that enters into the substation room. The machinery house was designed to have its own substation due to the fact that the then existing marine railway proved to be in need of such a service.

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The structure is built having a concrete frame with concrete walls such that the base of the wall (4'-6" height) is approximately 12" wider than the walls. The side elevations have pilasters that expose the structural frame.

The roof is a flat roof with a thickness varying between 1'-3" and 1'-0" with metal flashing and overhangs of approximately 6". There are intermediate concrete beams which have a depth of 2'-0" that help support the roof. The roof over the lower entry portico area is flat with slight overhangs and a height of approximately 7'. The ceiling height within the substation and winch house areas measure approximately 15' high.

There are no windows on any of the walls of the structure. There are only rectangular screened openings with wood framed steel mesh coverings bolted to the building. These openings are located at the upper portion of the walls, just under the roof eave and at the bottom portion of the walls, within the base of the wall. There is a roll-up metal door at the south wall. It is uncertain if this door was added at a later date, or if it was originally built as such; however, the drawings show this area to have a concrete block infill wall that would be removable if needed. There are wood entry doors into both the substation and the winch house from the vestibule area. The doors are flush wood doors. The door that leads to the substation is attached to a steel frame with steel mesh fill.

The winch measures 23'-6" x 16'-0". The winch has four large hoist wheels that pull the hoist chain, which connects, to the ship. When docking a ship, adjustable blocking can be moved into place through the use of winches located atop steel framing which are built up from the edges of the cradle and extend above the water line. "The cradle and superstructure are of steel plate girder cross members, spanning bearing members which rest on roller nests. The deck is built of three-inch planking and is framed up from the cradle to level" (Pacific Bridge Co., 1944: 88).

The interior lighting on the winch house side is incandescent pendant lighting (5 count). The lighting on the substation side is hanging fluorescent fixtures (13 count).

The condition of Facility 233 appears to be good. The screened openings are in need of repair and the facility is in need of maintenance such as painting. There have been no major alterations to Facility 233.

Historical Context:

The Pacific Bridge Company was the contractor for the Machinery House. The company was, at the time, completing the construction of dry docks Nos. 2 and 3, at Pearl Harbor (under Noy-3825). It was believed that the experience gained in connection with this work and the continued availability and use of the contractor's equipment already in place were factors that would make the selection markedly

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advantageous to the government. The date of completion is recorded as September 1943.

The Machinery House was built in 1943 in order to facilitate the needs of the marine railway structure (Facility S777). On October 4, 1941, a fourth fixed-fee contract was awarded for the building of another battleship drydock, Dock No. 4, and a 20,000 kw bombproof power plant. The contractor already at work on docks No. 2 and 3, began work on these new facilities during November. Under emergency conditions following the attack on Pearl Harbor, it was imperative to establish the cost-plus-fixed-fee (CPFF) relationship possible under a CPFF contract. The lump-sum contract was therefore terminated on December 7, 1941, and Dock 2 and 3 which at that time were 90-percent complete, were finished under a CPFF contract. In addition to the completion of the dry docks, the new CPFF contract included construction of the 3000-ton marine railway and its supporting facilities, including the Machinery House.

The Marine Railway (Facility S777), the Crane Wharf (Facility 1461), and the Machinery House were all built in 1943 and were in use until 1977. A Historic Resources Inventory for Facility S777 was written in October of 1980, and it was dismantled soon after. The "landing craft" was not removed at this time but remained parked on the land next to the Winch House until 1999. All that is left of the Marine Railway is the metal tracks upon which the cradle ran and the Machinery House.

For an overview of the Naval Shipyard see HABS No. HI-483.

Sources:

The original drawings for this building are on microfilm at NAVFAC PAC Plan Files.

Nakahara, Kenneth. Historic Resources Inventory Form for Marine Railway No. 2, 1980. Prepared by Pearl Harbor Naval Shipyard, Facilities Planning & Programming for State Historic Preservation Office.

Pacific Bridge Co. *Technical Report and Project History, Contracts NOy-5049, for Construction of Dry Dock and Power Plant, Moorings and Additional Facilities*, 1944. Prepared for the Navy Department, Bureau of Yards and Docks. Report on microfilm at Pacific Division Naval Facilities Engineering Command Library.

U.S. Navy Bureau of Yards and Docks. *Building the Navy's Bases in World War II, History of the Bureau of Yards and Docks and the Civil Engineering Corps 1940-1946 Volume II*. United States Government Printing Office: Washington, 1947.

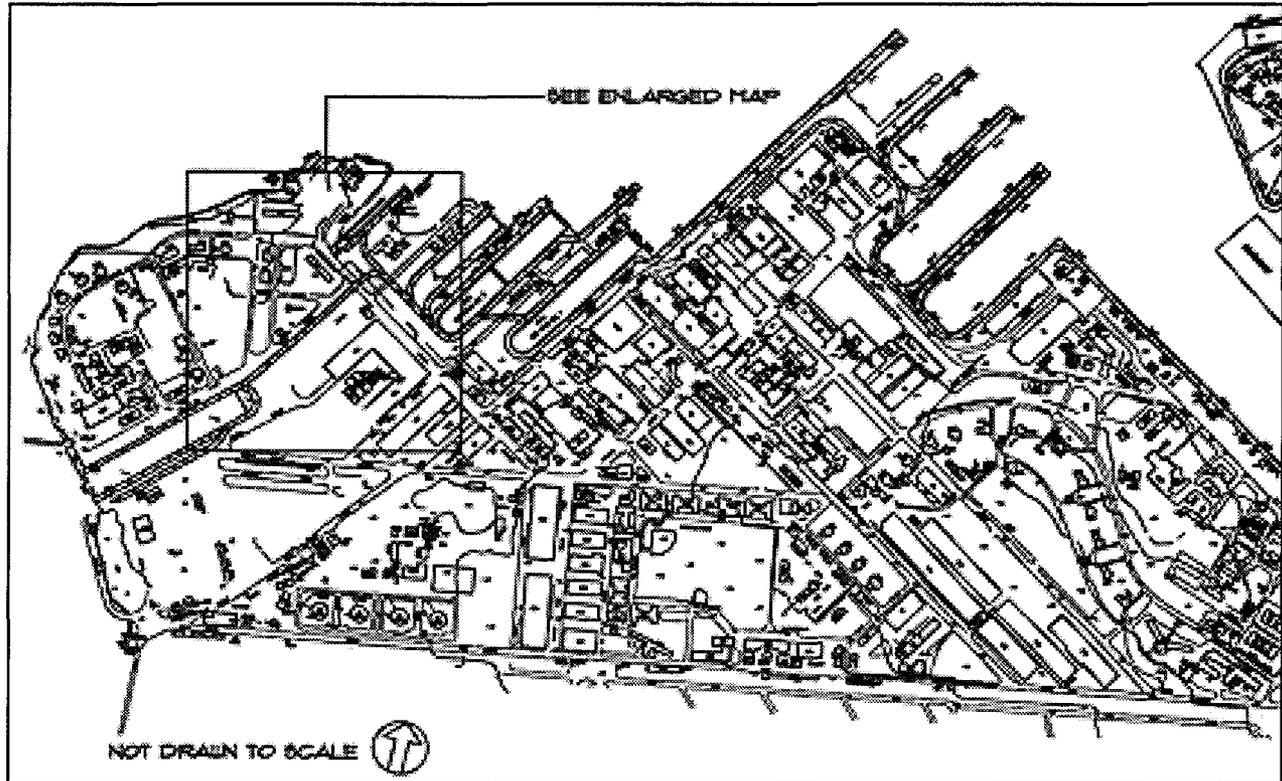
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Project Information: Photo documentation and recordation of this facility by the Navy has been done in anticipation of future alterations or potential demolition of the structure. Photo documentation of historic facilities by the Navy assists in expediting planned undertakings by having the documentation prepared prior to taking actions. Also, photo documentation assists the Navy in gaining more information about its historic facilities to assist in making proactive management decisions. This project is being supervised by Jeffrey Dodge, Historical Architect, NAVFAC Hawaii. The photographic documentation was undertaken by David Franzen, photographer. Lorraine Minatoishi Palumbo, Architectural Historian, of Mason Architects, Inc. prepared the written documentation. The field work and research for this report was conducted between the dates of July 2001 and December 2001.

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January 2003

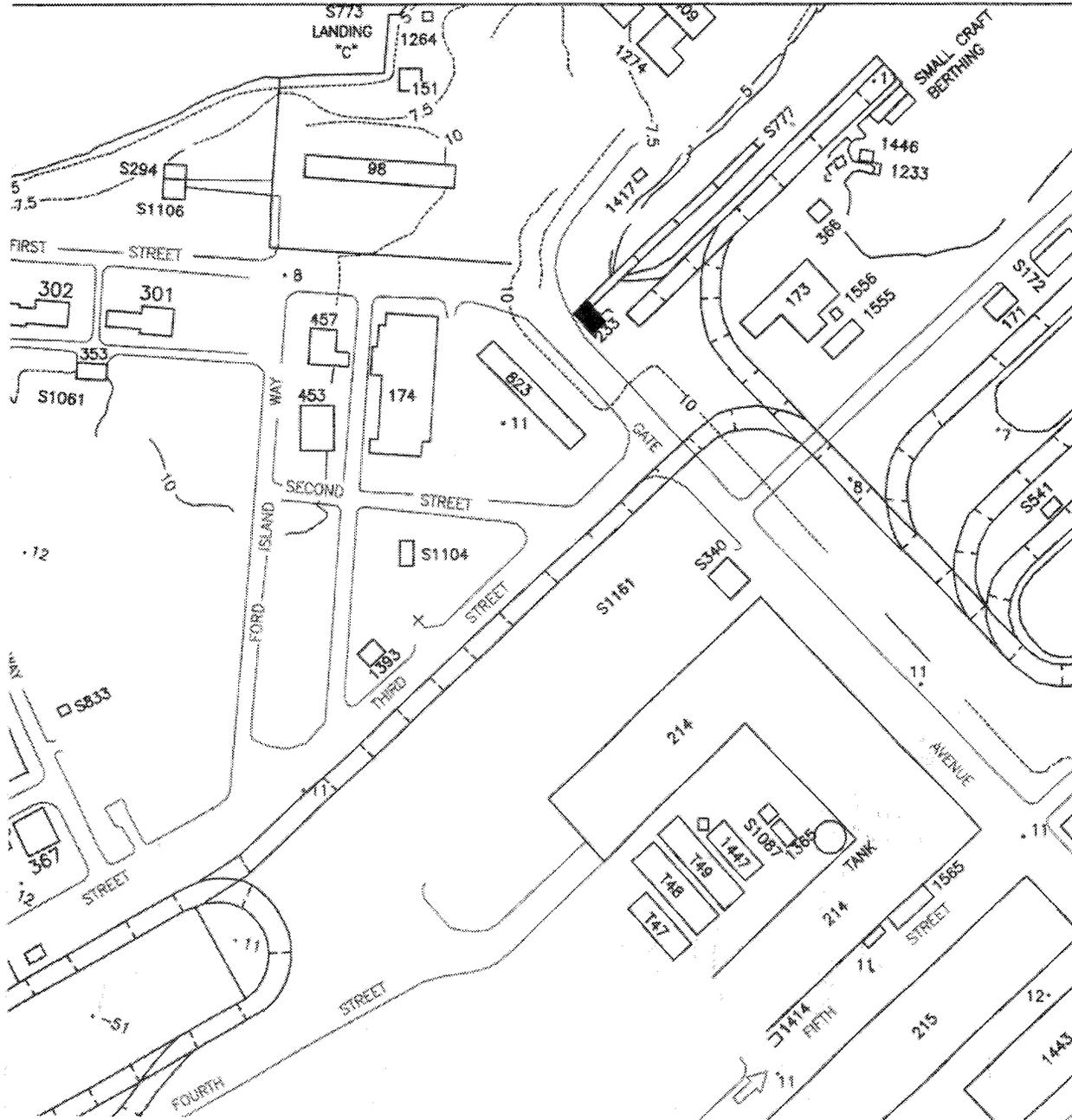
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Shipyard Map



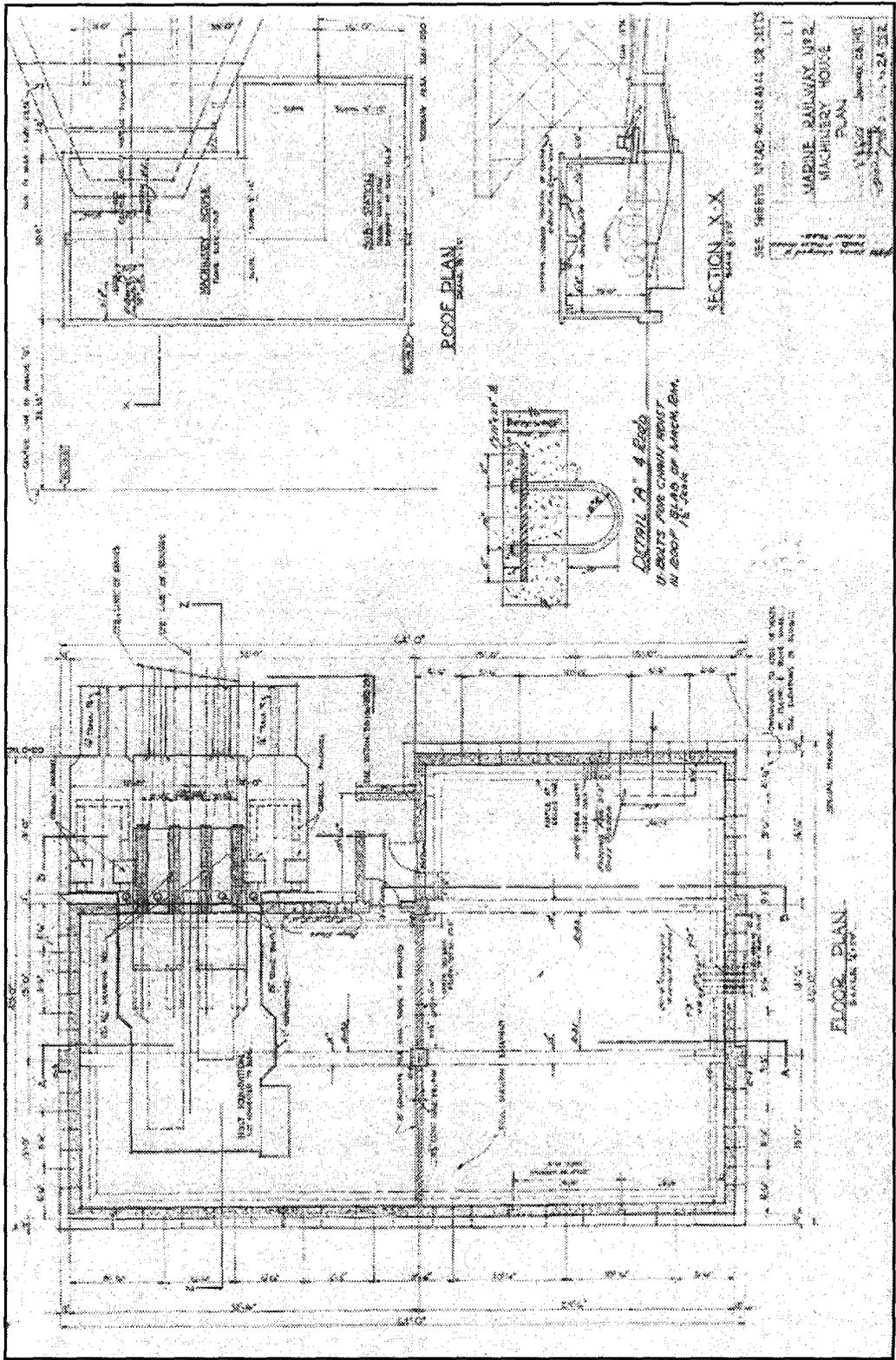
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Enlarged Area Map (reduced, not to scale)



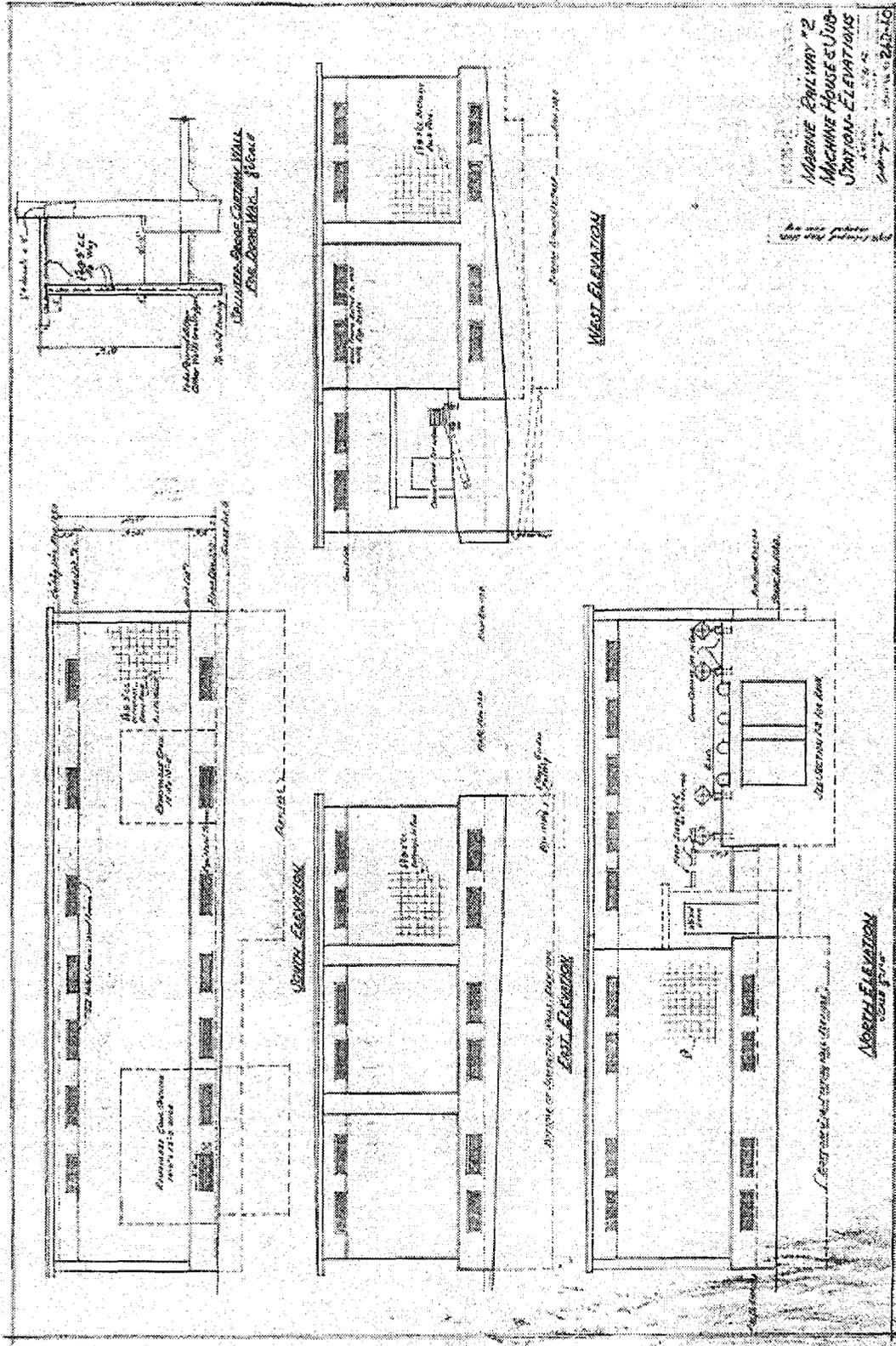
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**Facility 233 Marine Railroad No. 2 Machinery House, Plan
(Drawing No. 998, dated 1/28/1912) (reduced, not to scale)**



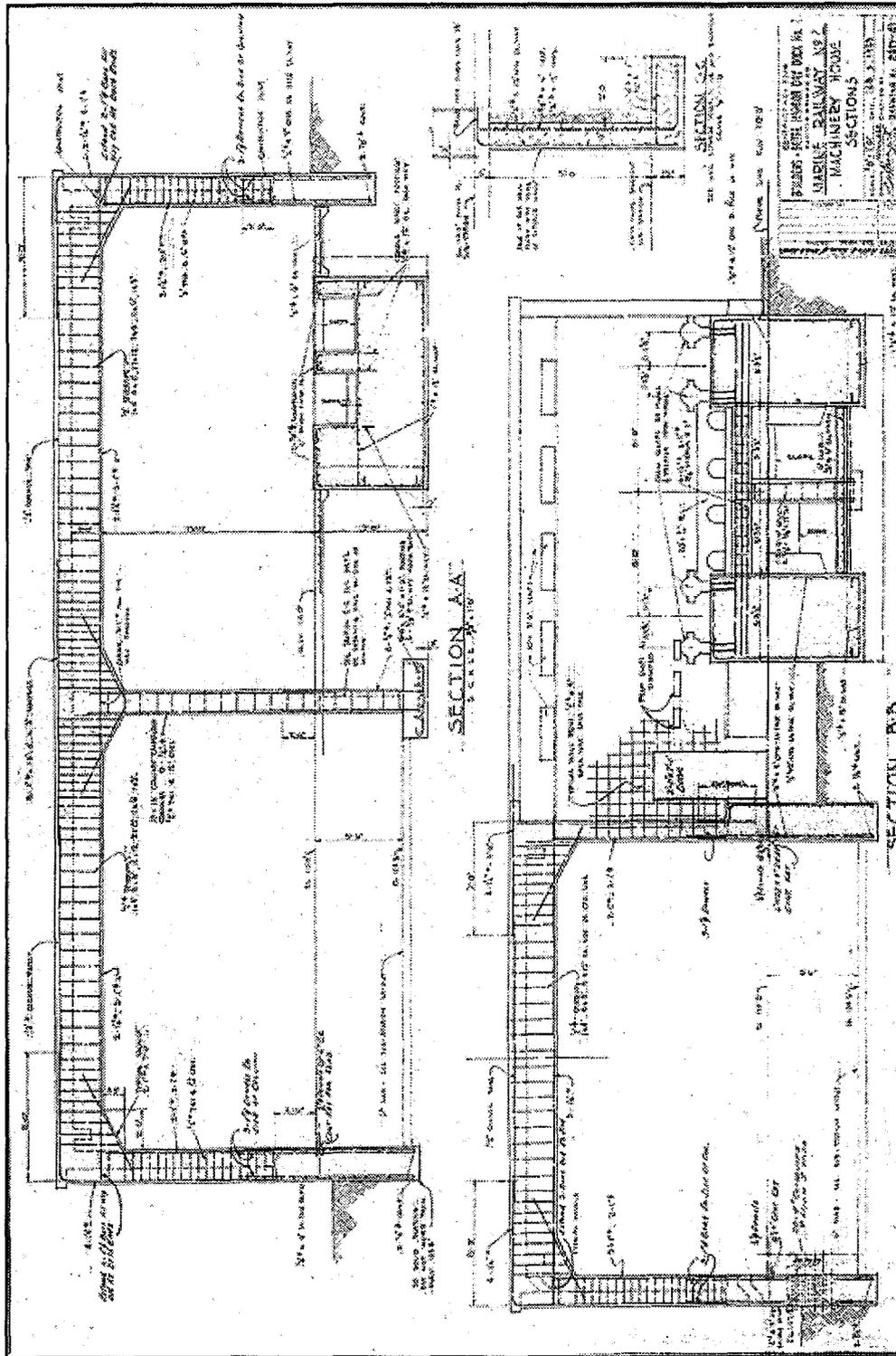
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**Facility 233 Marine Railroad No. 2 Machinery House, Elevations
(Drawing No. 981, dated 2/5/1942) (reduced, not to scale)**



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Facility 233 Marine Railroad No. 2 Machinery House, Sections
(Drawing No. 1000, dated 2/5/1943) (reduced, not to scale)



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Facility 233 Marine Railroad No. 2 Machinery House, Details
(Drawing No. 1001, dated 3/23/1943) (reduced, not to scale)

