

U.S. NAVAL BASE, PEARL HARBOR, TEMPORARY
STOREHOUSES - 1944 TYPE
(Fleet and Industrial Supply Center)
(General Warehouses)
(Facility No. 489, 490 & 491)
North Road at Neches Avenue
Pearl Harbor
Honolulu County
Hawaii

HABS HI-435

HI-435

HABS

HI-435

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDINGS SURVEY
PACIFIC GREAT BASIN SUPPORT OFFICE

National Park Service
U.S. Department of the Interior
600 Harrison Street
San Francisco, CA 94103

HISTORIC AMERICAN BUILDINGS SURVEY

U.S. NAVAL BASE, PEARL HARBOR, TEMPORARY STOREHOUSES – 1944 TYPE (U.S. Naval Base, Pearl Harbor, Fleet and Industrial Supply Center) (U.S. Naval Base, Pearl Harbor, General Warehouses) (Facility Nos. 489, 490, and 491)

HABS No. HI-435

- Location:** North Road and/or Neches Avenue
Facility No. 489 at Neches Avenue and Arizona Street intersection
Facility No. 490 between North Road and Downes Street
Facility No. 491 at North Road and Neches Avenue intersection
Fleet and Industrial Supply Center Warehouse Area
Pearl Harbor Naval Base
City and County of Honolulu, Hawaii

U.S.G.S. Pearl Harbor Quadrangle, Hawaii, 1999
7.5 Minute Series (Topographic) (Scale - 1:24,000)
Universal Transverse Mercator Coordinates
Facility No. 489 4.609910.2362860
Facility No. 490 4.609920.2362440
Facility No. 491 4.609850.2362470
- Significance:** Facility Nos. 489, 490, and 491 are associated with the expansion of facilities at the Naval Base during World War II. They were the second set of storehouses built on the fill land that created Kuahua Peninsula. These storehouses, along with the others, were vital parts of the supply system for bases in Hawaii and for the advance lines in the Pacific during the last years of WWII. They have great integrity of design, location, setting, materials, workmanship, feeling and association. These structures remain an integral part of the late World War II group of Naval Supply Depot buildings. Facility Nos. 489, 490, and 491 are contributing elements to the Pearl Harbor National Historic Landmark.
- Description:** Facility Nos. 489, 490, and 491 are located in a section of the base that was originally fishponds (Loko Muliwai / Kunana) or part of the East Loch waters. Kuahua Island became Kuahua Peninsula in the early 1940s by filling these fishponds and nearby shallow shore areas. Facility Nos. 490 and 491 are prominent because they are located at a bend in North Road and terminate the view down this road when looking north from the Submarine Base. A large concrete shop building (Facility No. 482) is nearby, as well as three earlier wood-frame storehouses of similar design and function – Facility Nos. 404, 405, and 406. Some modern industrial structures have been built on the east side of Neches Avenue. The land surrounding the Kuahua buildings is mostly paved, with very little landscaping. Chain link fences secure the areas around the storehouses.
- The three storehouses are large one-story structures, all approximately 25' tall. Facility No. 489 is rectangular in plan, and measures 352'-0" x 120'-0". Facility No. 490 has the same overall measurements as Facility

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No. 489; however, it was built with a clipped southwest corner, due to the rail line that formerly curved from North Road to run along its west side. Facility No. 491 has a clipped corner like Facility No. 490, and is the smallest of the three storehouses, measuring 272'-0" x 120'-0". The angle of North Road, the curve of the rail line to Neches Avenue, and position of Downes Street determined the size and shape of this storehouse. Facility Nos. 489 and 490 are 22 bays long and three bays wide, with four of the bays on the west side of Facility No. 490 made smaller by the clipped corner. Facility No. 491 is 17 bays long by three bays wide and, like Facility No. 490, four of the west-side bays are affected by the clipped corner.

All three structures have pile foundations, with a separate footing under each column. The inner rows of columns are supported by three piles under each footing, while the perimeter columns have two piles per footing. The outer columns are also connected by an 8"-wide perimeter foundation curb of concrete. The curb is continuous except at the door openings.

The storehouses have wood structural frames; the exposed wood roof trusses are supported by 12" x 12" timber columns. The columns are spaced 16'-0" on center along the length of the sides, 32'-0" apart down the two rows of interior columns, and 40'-0" on center across the width. The trusses are nearly flat, with almost parallel top and bottom chords. All the structures are enclosed with corrugated metal panels. This siding material distinguishes these storehouses from the slightly earlier Facility Nos. 404, 405, and 406, which have board and batten siding. The original drawings for Facility No. 491 show vertical boards and battens, but the corrugated metal siding was substituted during its construction, as shown in 1944 completion photographs.

The 1944 photos and original drawings show that each storehouse had large wooden doors, measuring 15'-8" square. Most of the large door openings also have interior sliding or hinged gates, composed of metal mesh over wood frames; these allow air flow through the building, while providing security when the outer doors are open. All three facilities have one large door in the center bay on each end, and originally there were two to four large doors along each side of the buildings. All of them slide on exterior-mounted overhead tracks. In Facility Nos. 489 and 491 the large doors are now constructed of corrugated metal over wood frames, replacing the original wooden doors. Facility No. 489 has two large doors on its west side and three doors on its east side. Facility No. 491 has three large sliding doors on its east and west sides. The door locations have been altered on Facility No. 490, but it retains most of its original doors, with diagonal wood boards in wood frames. Its north end door, like those on other warehouses in this area, is built of corrugated metal over a wood frame. Three of the four large doors, along with much of the siding, on the west side of Facility No. 490 have been removed. However, one

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original wood door remains on this side. The south end of this storehouse also has an original wood door. On the east side of this building two of the four door openings have been enlarged. Thus, the two openings near the middle of this side each have double sliding doors of wood.

Originally there was only one standard-size (about 3' x 7') hinged door in each storehouse, leading into the office space. The original door locations for Facility Nos. 490 and 491 are on the west side, but on the south end for Facility No. 489. One door has been added to each storehouse. Most standard-size doors are now modern flush types, typically metal. There is a narrow vision pane in the west-side door of Facility No. 490.

Originally, all the windows in these storehouses were double-hung, one-over-one light, wood-framed sash. The locations of the windows correspond to the offices and toilet rooms in the structures. Facility Nos. 490 and 491 had the same placement pattern, originally. This consisted of two pairs of windows for the office in the northwest corner (one pair on the north end and the other on the west side), and two single windows on the west side, one each for the men's and women's toilet rooms. These windows have been replaced with jalousies, and additional windows added along the north end and west side. On the east side of Facility No. 490 a triplet set of original-type windows has been installed. In the northeast corner of Facility No. 491 three windows similar to the original-style ones, but taller, have been added high on the wall -- two on the east side and one on the north end. Facility No. 489 has a large office space with four sets of triplet windows on the west side and two paired and two single windows on the south end. [Note that triplet windows were installed, although the original drawings show groups of four windows.] Three additional single windows are on the west side, corresponding to the toilet rooms. One of these windows has been replaced with jalousies. Metal louvered awnings have been placed over most windows on the west side of Facility No. 489. There is wire mesh security screening over all windows, except the high ones.

In addition to the windows, rectangular louvered vents have been installed in the upper walls, spaced every two bays across the east and west sides of Facility No. 489. However, there are no vents in the wall above the office windows at the southwest corner of this building and no vents in the other two storehouses of this type, Facility Nos. 490 and 491.

Facility Nos. 489, 490, and 491 have low-slope gable roofs covered in multi-ply built-up roofing. All three facilities have overhanging eaves and clipped rafter ends. Skylights domes, about 7' square, have been installed in each roof. One is placed in each of the central bays, alternately to the east and west of the ridgeline, and one skylight in every

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other bay down the sides. The domes are omitted in the smaller clipped bays of Facility Nos. 490 and 491.

New gutters and downspouts were added only on Facility No. 490. This building also has two canopies erected on its east side, which don't actually abut the storehouse. These canopies are parallel to that side, sited about 3' from the wall, and each has a footprint about 110' x 40'. These metal rigid-frame canopies have low-slope gable roofs, approximately 15' high, with open sides. They cover loading platforms and ramps that were constructed near the enlarged doors at the middle of this side.

Some elements of the fire protection and plumbing systems are on the exterior of these storehouses, such as the risers and metal enclosures over the valves and electrical switches. Various other electrical boxes and conduits also have been installed on the exterior of these warehouses. There are at least two types of exterior light fixtures mounted high on the storehouse walls. There are older-style ones on short stems, which project from the north-end corners of all three storehouses, and over several doors on Facility Nos. 489 and 491. Modern rectangular light fixtures are located elsewhere, typically above the large doors. Facility No. 489 has a third type of exterior light fixture along its east side. These projecting modern floodlights are larger than the fixtures with stems that are mounted over some doors or at the north corners of the warehouses.

The interiors of the storehouses are mostly large open spaces, interrupted only by the timber structural columns. The boards of the roof sheathing and the trusses are generally exposed. The surfaces of the main space in each warehouse are unfinished. The original office and toilet rooms, located in one corner of each building, have ceilings. The ceiling level in Facility No. 489 is at the bottom of the bottom chord of the trusses (about 18' above the floor). The original four-bay office space in Facility No. 489 has been reduced to two bays, but the ceiling remains in the two bays returned to storage use. In the other two storehouses, the ceilings of the office and toilet rooms are lower. Most of these rooms have been altered; also, small additional partitioned spaces have been constructed. For instance, in Facility No. 490, a caged enclosure and an additional office space have been created at the north end. Facility No. 491 currently has no mezzanine level, although the windows in the upper walls of the northeast corner suggest one was installed or planned. The floors of these warehouses are generally asphaltic concrete, except the office and toilet rooms have floors of reinforced concrete. The southern five bays of Facility No. 490 have a concrete slab floor that is about 8" higher than the asphaltic concrete paving in the rest of the building. A ramp of asphaltic concrete in the sixth bay from the south end accommodates the floor level change. Shelving and stored materials

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create aisles within the buildings. Several types of Industrial light fixtures, as well as the skylights, illuminate the interior.

Historical Context: See the report on warehouses (HABS No. HI-388) for an overview history of storehouses in Pearl Harbor. Also, see the report on the similar wood-frame Kuahua storehouses, Facilities Nos. 404, 405, and 406 (HABS No. HI-430).

Facility Nos. 489, 490, and 491 were built in 1944 to address part of the increasing need to stockpile large quantities of supplies for the Pacific fleet and Pacific bases during World War II. The Naval Supply Depot at Pearl Harbor had to be ready to quickly provide for large requisitions from the forward battle lines. These buildings were part of the plan to develop new areas of Pearl Harbor for storehouses. Kuahua Island had become Kuahua Peninsula, using spoils from dredging operations in Pearl Harbor, and rock from the Red Hill tank excavations. This created more level land on the base for large warehouses, at a convenient location for transferring supplies to or from ships, trains, and trucks. Most of the construction work at Pearl Harbor in the early 1940s, including the storehouses and other buildings, the land filling and harbor dredging, as well as the Red Hill fuel facilities, was done by the consortium of builders known as Contractors, Pacific Naval Air Bases (CPNAB). Facility Nos. 489, 490, and 491 were the last three large storehouses built on the Kuahua Peninsula during WWII, although drawings show more were planned at one time.

The sequence of construction for these three buildings was originally planned to be Facility Nos. 489 and 490 at the same time, followed by Facility No. 491. The first two storehouses were included in the same set of drawings, approved 18 October 1943 (drawing nos. M-N6-363 through M-N6-372). As it turned out, Facility No. 491 was completed before Facility No. 490, although the drawings for the former were approved later, on 9 December 1943 (drawing nos. M-N6-379 through M-N6-387). The construction of Facility No. 490 was delayed because it required special composite piles, as described below. Although notations (contract no. NOy-4173, project no. 1086) on the drawings for Facility Nos. 489 and 490 suggest that these two buildings were to be constructed by CPNAB, the drawings for Facility No. 491 did not have any such notes. There is conflicting or confusing information about the timeline for construction of these storehouses. The date of usable completion of project no. 1086 is listed as July 1943 in the CPNAB completion report; the project is defined as eight temporary storehouses, but no locations or facility numbers are specified (Contractors, Pacific Naval Air Bases n.d.: A-710 and A-707). According to the notation on drawings for these buildings, project no. 1086 includes Facility Nos. 489 and 490; however, the drawings themselves were not approved until October 1943, after CPNAB's listed completion date. A March 1944 photo shows that Facility

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No. 489 was roofed by that date and the framing was nearly complete for Facility No. 491 (Hawaii State Archives 1944). A photo dated June 1944 shows that Facility No. 491 was essentially finished but that foundation work for Facility No. 490 had just started, while an October 1944 photo shows them both completed (Naval Facilities Engineering Command Archives 1944). The June 1944 photo has the CPNAB contract number (NOy-4173) on it, but a different project number (CP4-87).

The involvement of CPNAB in the construction of all three storehouses is not certain. One or more of these storehouses may have been built by Naval Construction Battalions (CBs or SeaBees). Seabees were used in Hawaii as early as the spring of 1943, to help expedite the contractors' work, at least partly offsetting a tight labor market from the loss of personnel to the war effort. "Initially these battalions undertook new projects, supplementing the contractors' forces, but eventually they replaced the contractors' personnel and brought about a gradual curtailment of contract activities" (U.S. Navy, Bureau of Yards and Docks 1947: Vol. II, 122). The transition to Seabee labor also had the advantage of being cheaper for the Navy. By 1944 the Seabees had mostly, but not completely, replaced contractors at Pearl Harbor.

It is clear that the pile-driving for Facility No. 490 was done under a contract (no. NOy 8511) with Hawaiian Dredging Company (HDC), which was one of the firms in the CPNAB consortium. HDC's completion report described how the 168 composite piles (made of timber, steel, and concrete) for the foundation of Facility No. 490 were installed:

In driving the timber piles, a special adapter was used on the pile driver hammer to prevent brooming and other damage to the trimmed head section.

The steel taper pile shell had a steel plate welded on the bottom end, with a hole to fit over the trimmed end of the timber pile. This plate acted as a template and resembled a large steel washer.

A steel follower was inserted through the steel taper pile and driving resumed until the top of the timber pile reached or went below elevation 100 (MLW) and had attained the calculated bearing capacity of 25 tons.

After driving was completed, the steel top section of the pile was burned off at the required elevation and the pile shell was filled with concrete (Hawaiian Dredging Company, Limited n.d.: 10-11).

During the delay in construction of Facility No. 490, the design changed slightly. In the plot plan on the October 1943 drawings, the footprint of Facility No. 490 did not have a clipped corner like Facility No. 491, but a projection at the south end; this projection was two bays (rather than three bays) wide, and 64'-0" long. By June 1944 it decided to build it with

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an angled wall, matching the corner of Facility No. 491. The drawings for these storehouses were produced by the Fourteenth Naval District Public Works Office, as were the drawings for the nearby 1943 storehouses (Facility Nos. 404, 405, and 406); in fact, some of the same drawings are used for both, such as the one showing a typical half-bent, which is simply renumbered in the set for the 1944 storehouses. All the drawings are stamped with the certification about war-time design and materials requirements. This issue of restricted uses of certain materials is discussed in the report on the similar 1943 storehouses (HABS No. HI-430). Facility Nos. 489, 490 and 491 used corrugated metal siding, rather than the board-and-batten siding used on the 1943 storehouses. Metals were generally considered controlled materials, but typically that applied more to steel framing members and to scarce metals, such as copper. The guiding principal of the directives for war-time construction was "to utilize those materials which are most plentiful" to expedite construction and to interfere the least with combat material production (Combs 1944: 1).

Changes were made to the office and toilet rooms of Facility No. 489 soon after construction. These rooms were moved from the east side of the storehouse to the southwest corner and the office was greatly enlarged -- to occupy four full bays, instead of a portion of one bay. These alterations are dated 3/16/44 on several drawings in the set. This storehouse, along with Facility Nos. 404, 405, and 406, was designated an "Issue Building" for dry stores during WWII (Naval Supply Depot 1945: [4]). Facility No. 490 was listed as a Provisions activity storehouse in September 1945, but Ship's Store material was also stowed in this building. Facility No. 491 was occupied by the Clothing Division, starting in June 1944 (Naval Supply Depot 1945).

Most of the changes to these buildings are minor, and were made after WWII. Several of these alterations cannot be precisely dated, since no drawings documenting them were found. For instance, a 1944 electrical drawing (no. M-N6-388) was found for Facility No. 491, showing first and second-floor lighting plans. This implies that a mezzanine had been installed over most of the side bays of the building, but no other drawings or photos were found to confirm that. The only other evidence of the mezzanine's existence is the windows installed high in the northeast corner of the storehouse. Similarly, the date of removal of the Facility No. 491 mezzanine is not documented in drawings or photographs. An electrical drawing (no. M-N6-410) for Facility No. 490, dated 1951, suggests that the new office and metal enclosure at the north end were installed about that time. This drawing does not indicate the addition of windows in the new office, but these were likely installed at that time. The major alterations to Facility No. 490 were done in 1974 and involved the removal of siding along most of the west side, building a larger ramp on the interior, the addition and relocation of doors on the east side, and the construction of two rigid-frame canopies with loading platforms and ramps

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along the east side of the building. Two of the wood doors on the east side of this storehouse were noted on a drawing (no. 7007231) as relocated from Building 478, a transit shed along the Kuahua waterfront. In 1983 skylights were added to the roofs of these three storehouses, and to the roofs of other Naval Supply Center warehouses. About 1988 fire sprinkler systems were added to all six storehouses in this area.

Sources:

The original and alteration drawings for these buildings are on microfiche cards at the Plan Files of the Naval Facilities Engineering Command, Pacific. The original drawings are 14th N.D. numbers M-N6-362 through M-N6-372, and M-N6-379 through M-N6-388. Renovation drawings are filed under M-N6-410, 7007227 through 7007235, 7029177, 7029178, and 7029185. Other alteration drawings for these buildings are included in the set of drawings starting with 7075446 and ending in 7075464.

Combs, L.B.

1944 Circular letter from Acting Chief of Bureau of Yards and Docks dated 10 February 1944, on Policy regarding restrictions on use of construction materials. In RG 71, Bureau of Y&D Circular Letters, 1940-1945, Box 1, Folder 1, at National Archives II, College Park, Maryland.

Contractors, Pacific Naval Air Bases

n.d. *Technical Report and Project History, Contracts NOy-3550 and NOy-4173.* Microfiche of report at library of Naval Facilities Engineering Command, Pacific.

Hawaii State Archives

1944 Aerial photo of Kuahua Peninsula dated March 11, 1944, Admiral Furlong Collection, Folder PPFUR 2-2, Neg. 1998.035, Honolulu, Hawaii.

Hawaiian Dredging Company, Limited

n.d. *Cost Plus-a-Fixed Fee Contract NOy 8511, Record Report, Midway Island, Maui and Oahu, Territory of Hawaii.* Microfiche of report at library of Naval Facilities Engineering Command, Pacific.

National Archives II

1944 Aerial of Pearl Harbor dated 24 May 1944, in Still Photo Section, number 80-G-276947.

Naval Facilities Engineering Command Archives

1943 Photo of completed Temporary Storehouse Bldg. No. 491 and foundation construction for Storehouse Bldg. No. 490 dated June 23, 1944; photo of completed temporary storehouses

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dated October 2, 1944 -- both in Box TI8/27, Port Hueneme, California.

Naval Supply Depot

1945 World War II Administrative History of the Naval Supply Depot, Vol. III / Pearl Harbor, T.H. Provisions Group section of unpaginated typescript in Significant Supply Department Records, 1942-1945, Box 2; Records of the Supply Officer, Fourteenth Naval District, RG 181; National Archives and Records Administration, San Bruno, California.

U.S. Navy, Bureau of Yards and Docks

1947 *Building the Navy's Bases in World War II*. U.S. Government Printing Office: Washington, D.C.

Project Information: Commander Navy Region (COMNAVREG) Hawaii has embarked on a program of documentation of historic properties within its area of responsibility, with the goal of recording historic information about each property type and establishing its context of significance. This information will assist COMNAVREG Hawaii in the appropriate management of these properties, be it routine repair and maintenance for continuing use, rehabilitation for continuing use / adaptive reuse, or demolition. At this time, specific actions that may affect these facilities have not been determined. This report was prepared under a Historic Preservation Services contract (N62742-97-D-3502) awarded to AMEC Earth and Environmental, the prime contractor, by the U.S. Navy, Naval Facilities Engineering Command. The contract was funded through the Cultural Resources Program of COMNAVREG Hawaii. The photographic documentation was undertaken by David Franzen, of Franzen Photography. Location maps were made by Nestor Beltran of NAB Graphics. Between 1999 and 2001, the field work was done and the draft of this report was written by Dot Dye, AMEC Earth & Environmental, Inc. The report was rewritten in 2006 by Mason Architects, Inc.

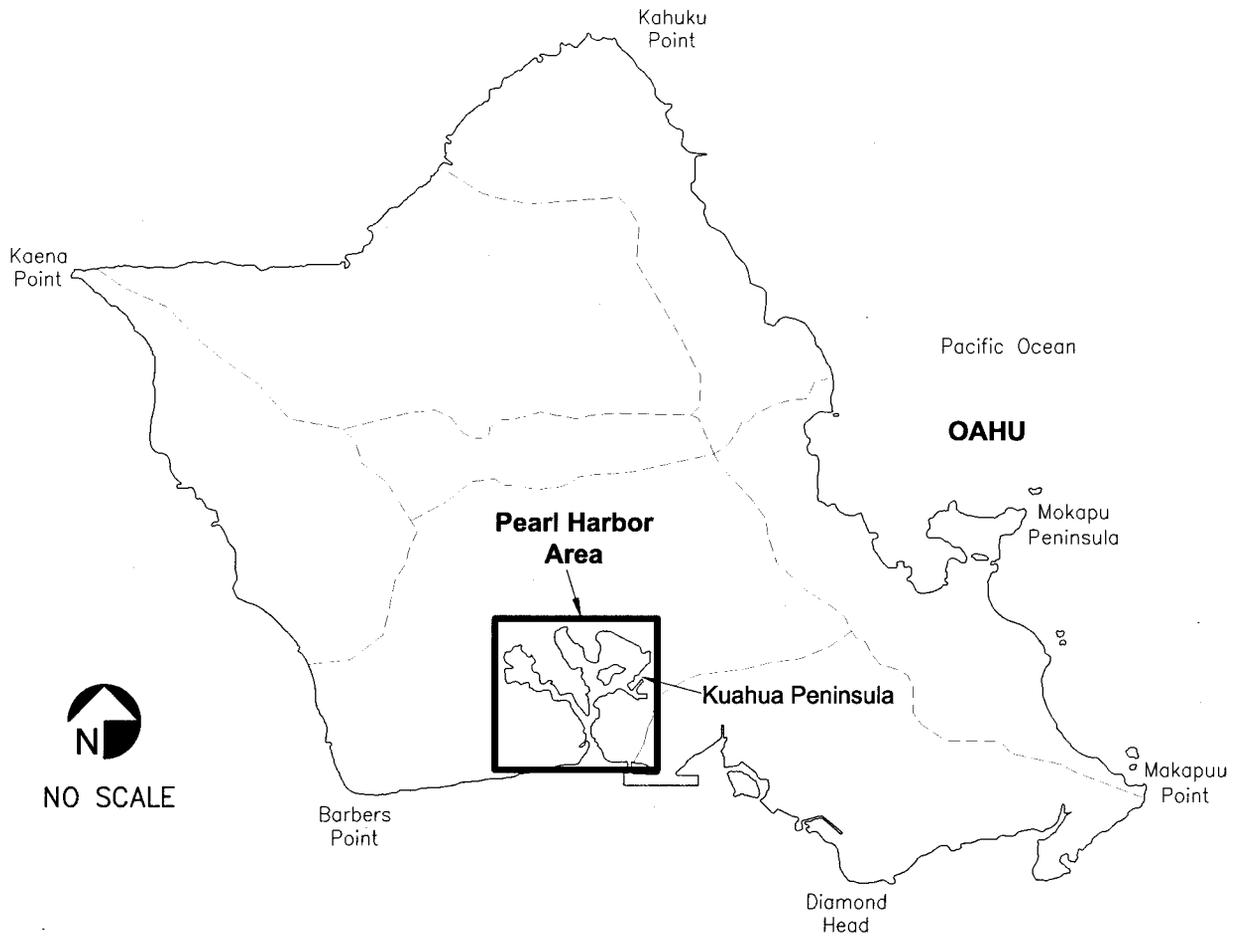
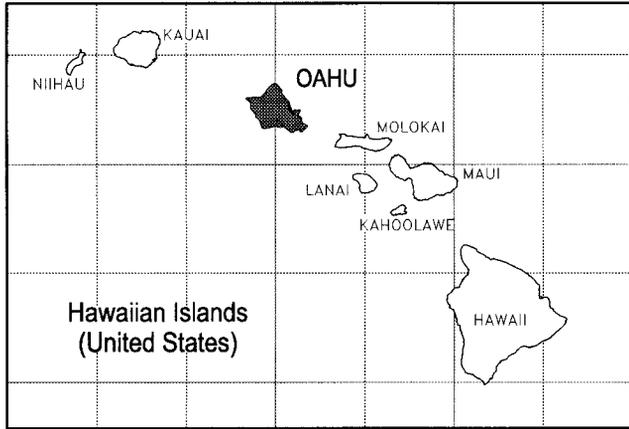
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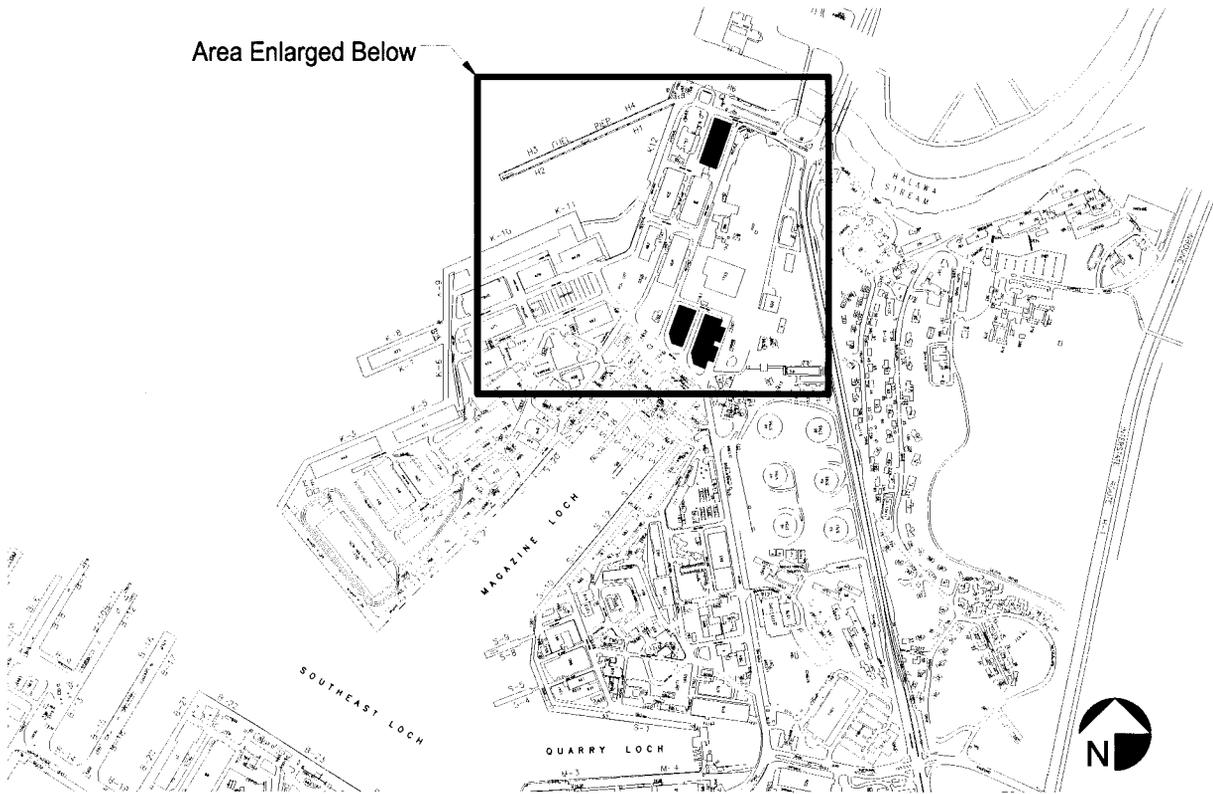
Date of Final Report: May 2006

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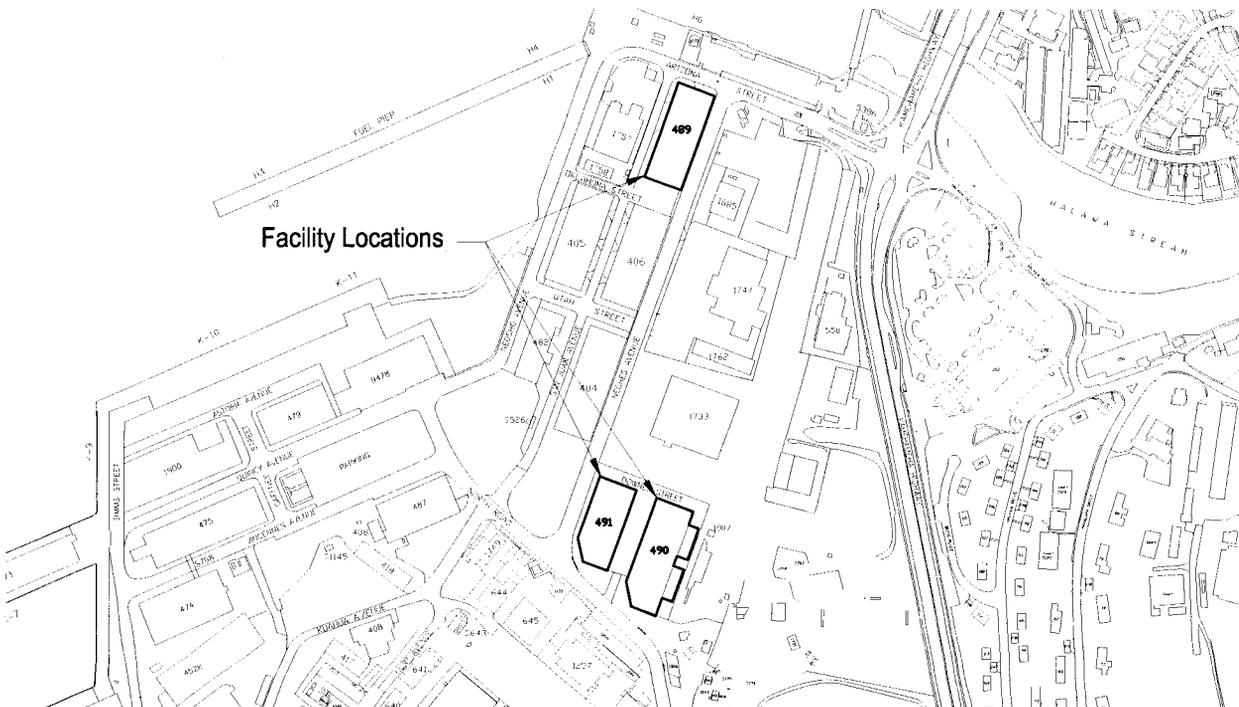
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Area Enlarged Below



Vicinity Map

NO SCALE

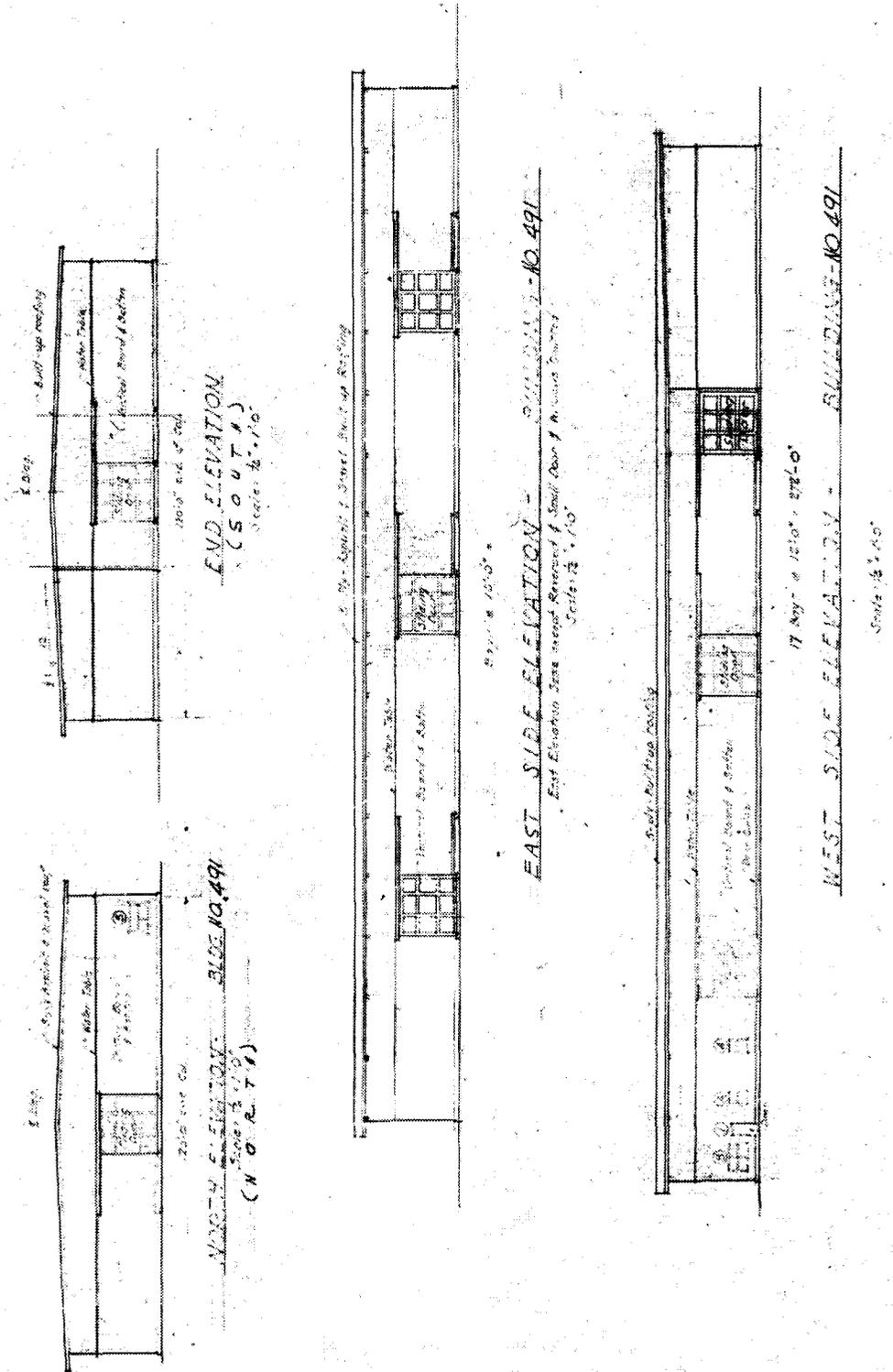


Facility Locations

Site Map

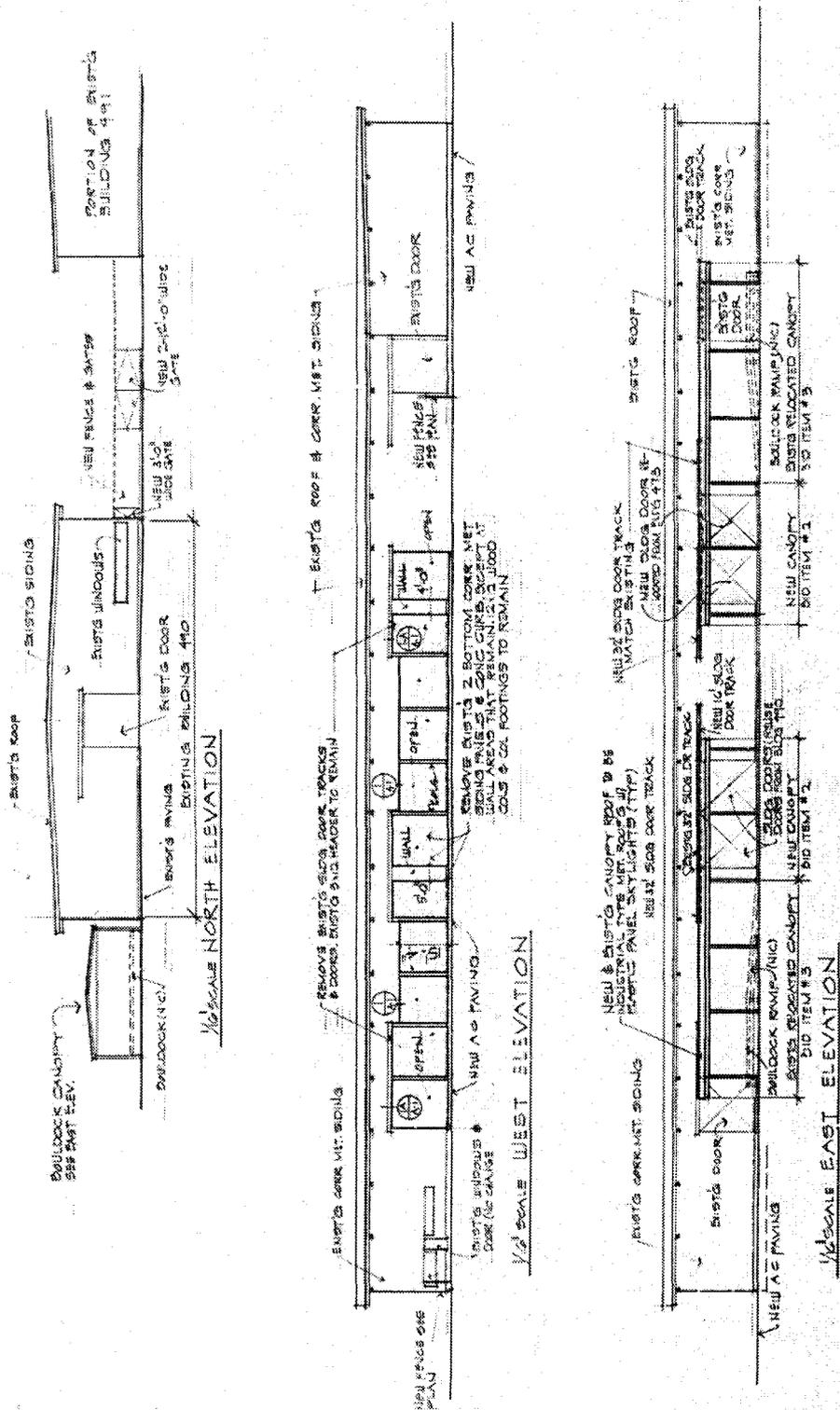
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Portion of Drawing No. M-N06-379, dated Dec. 9, 1943 (elevations of Facility No. 491)



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Portion of Drawing No. 7007231, dated Dec. 6, 1974 (elevations of Facility No. 490)



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Photo of Facility Nos. 491 and 490, dated 2 October 1944

(Source: Navy Facilities Engineering Command Archives, Box TI 8/27, PH 6197-44)

