

U.S. NAVAL BASE, PEARL HARBOR, POWER HOUSE  
(U.S. Naval Base, Pearl Harbor, Naval Shipyard, Facility No. 8)  
Near Seventh Street, between Avenues D & E  
Pearl Harbor  
Honolulu County  
Hawaii

HABS HI-446

HI-446

HABS  
HI-446

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, POWER HOUSE (U.S. Naval Base, Pearl Harbor, Naval Shipyard) (Facility No. 8)

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**Location:** Near Seventh Street, between Avenues D and E  
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.

**Significance:** Facility No. 8 is a contributing element to the Pearl Harbor National Historic Landmark. Built in 1913, it is significant as one of the earliest structures of Pearl Harbor and as the original electrical power plant for the initial base. This power house used steam-powered generators to supply electricity to the shops of the initial naval shipyard, and continued to be used as an auxiliary power plant through the World War II period. The facility represents two significant periods of Navy history at Pearl Harbor; the initial build-up of the base and the World War II years.

**Description:** This building is a utilitarian gable-roof structure with minimal detailing. However, it has a distinctive double roof form with a 6-to-12 roof slope and two parallel monitor roofs over the two main sections of the building. The almost continuous bands of windows in the monitors help light the large interior spaces and promotes ventilation. The roof over the boiler house section, or north roof, is lower than the south roof over the engine room section. Originally, there were canopy roofs at the east and west ends of the boiler house section. However, the wall at the west end has been pushed out to the edge of the former canopy. The roofing material is not original, with corrugated aluminum and translucent corrugated plastic sheets replacing the original corrugated sheet metal. The original gutters and downspouts have also been replaced with aluminum ones. The complex steel truss roof framing is original. The trusses, columns, and struts of the wall framing are also steel, sheathed with corrugated metal panels. Large steel-frame windows occupy much of the wall surfaces. The floor and foundations are concrete. The original building measured 120'-0" x 100'-0".

The boiler house part of the building was built over filled marsh land, and has pile foundations, while the engine room part of the building has spread footing foundations on firmer ground. Because of the slight slope of the land, the retaining wall on the east side is 4'-9" tall. There is a concrete wall between the boiler and generator rooms.

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Because the roof is higher in the generator room, a row of high windows were installed there above the concrete wall.

The generator room has two levels with large concrete platforms with arched openings supporting the compressors and three turbo-alternators on the upper floor. Several deep pump pits puncture the first floor and are still used to pump oily water from this area of the Shipyard. Only the concrete pads for that equipment remain, plus a closet-like electrical enclosure along the south wall with sliding wooden doors enclosing shelves with ceramic insulators. There is also a small mezzanine built in the northwest corner above the generator level. All the stairs between levels are metal grating with pipe railings, except the concrete stair to the locker room of the northeast corner addition.

The boiler house section is mostly open, with an off-center row of columns, and contains several trenches covered by metal grating. The north side of the boiler house contains an elevated platform and large vats, built when this room was used as a metal cleaning and electroplating center.

The metal-framed, multi-light windows are generally symmetrical. They have both fixed and horizontally pivoting sash, operated with connecting rods and wheel. The building originally had typical large warehouse-type sliding and hinged doors. Only a few remain. Train tracks originally ran into the western end of the engine room for easy loading and unloading of materials. A 15-ton-capacity bridge crane spanning the width of this room also helped with this function and remains in place today. The crane runs on girders and rails supported by columns tied into the concrete wall framing.

There have been quite a few additions and alterations made to this building since its construction. The irregular footprint of the building now measures over 185' x 105' in its largest dimensions. The walls of the boiler room were not enclosed until 1932, although plans had first been drawn for this in 1917. Drawings and photographs dated 1922 show the extension on the west end of the structure. Although this addition was made mainly to the boiler room, a concrete pump pit, with platform above was added to the west of the engine room. Interestingly, this west-end addition was made without removing the original west-end exterior wall. The pit and platform were covered by an extension of the boiler room roof. In the early 1920s, the east end of the engine room was extended. A second extension of this room was made about 1925. The boiler to the powerhouse was changed several times in an effort to increase the generated capacity for the ever-increasing demands. With these extensions the original end-wall windows were moved out to the new wall locations. The monitor roof was extended over the early 1920s additions, but not over the last engine room extension. In 1928, a simple concrete outer layer was cast around the more distinctively-shaped original stack of riveted metal plates at the east side of the building and the ornate spark

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arrester was removed. Other stacks were added or replaced on the west side of the building over the years. About 1932 a small addition with office and instrument room over a locker room was built in the northeast corner of the power plant. A switching substation was attached to the northwest corner in 1937. In the late 1930s, it was realized that the boiler was undersized for the Shipyard energy needs and a new facility was constructed elsewhere on base. However with the start of WWII, Facility 8 was kept in operation up until 1951. All the stacks were removed in 1977.

Many alterations cannot be dated. One of these is the small shed-roofed, open-sided but fenced addition on the west end of the pump pit. The dates of changes to windows are not known, such as the replacement of much of the window glass with translucent panels on the west end, and the covering up of the office addition windows. Most of the original doors have been replaced with gates of chain link or metal mesh. The function and date of the equipment added to the west end of the engine room monitor roof are also unknown.

**Historical Context:**

This building was constructed as the original electrical power plant for the Naval Station at Pearl Harbor. The building was funded under the Appropriation Act of March 4, 1911, and was the most expensive facility (not including the dry dock), with a cost of \$250,446 (Pearl Harbor Naval Shipyard n.d.: 41). The drawings were prepared by the Bureau of Yards and Docks. These original drawings are dated December 1911 and construction was completed by June 1913. As discussed above, the building has had numerous additions and alterations over the years to meet the Navy's changing mission needs.

Facility No. 8 was centrally located among several of the initial shop, warehouse, and other buildings that served the needs of the early Navy base. As the power needs of the installation grew dramatically in the build-up to World War II, two additional power plants were constructed in the 1940s with bomb-proofed designs. Facility No. 149 was the second power plant built at Pearl Harbor, uniquely modified during construction to be enclosed in a buttressed concrete bombproof wall. A 1940 letter report noted that the new power plant, then under construction, had sufficient capacity for all present and projected loads, with the expansion potential for double that generating capacity. It concluded that:

the retention of the present power plant in a reserve status is not considered warranted or economically justifiable, and the dismantling of the plant and the assignment of the building for industrial uses is recommended (Almy *et al.* 1940: 8)

With further expansion at the installation in 1940 and 1941, however, the first power plant was still needed. The building was in operation during the December 7, 1941 attack on Pearl Harbor. It suffered

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minor damage to the chimney from a 5" anti-aircraft shell from an adjacent ship, but was rapidly repaired to full operational capability.

A contract for the fourth dry dock and a bombproof power plant adjacent to it was awarded in October 1941 (U.S. Navy, Bureau of Yards and Docks 1947: Vol. II, 122). The demand for increased power grew tremendously after the Japanese attack, and this third power plant (Fac. 177) was completed in 1943 (Contractors Pacific Naval Air Bases n.d.: A-1030). It is not clear how long after the completion of Facility 177 that the original power plant was kept in operation. By 1948 the boilers inside the building were removed, but the engine room equipment was not removed until 1953. After WWII the demand for power at the installation dropped dramatically, as the work and employee levels fell.

Since the 1950s this building has served a variety of uses, including a cleaning center, a Public Works shop facility, a Shipyard test facility, and the Metal Trades Council office (Fogel 1980). The vats and exhaust hoods in the boiler room date from its years as a cleaning center.

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

**Sources:**

The original and addition/renovation drawings for this building are on digitally scanned images or microfilm at Pacific Division, Naval Facilities Engineering Command (NAVFAC EFD Pacific) Plan Files. Historic photos of this building are located at the National Archives II, Still Photo Section, RG 71 CA, and at the National Park Service, U.S.S. Arizona Memorial, Fourteenth Naval District Photo Collection.

- Almy, Capt. E.D., Cmdr. J.J. Manning, and Lt. Cmdr. Philip Lemler  
1940 Letter Report dated 29 April 1940 to the Secretary of the Navy on Development of Fourteenth Naval District. In National Archives, San Bruno, RG 181, Fourteenth Naval District, District Staff Headquarters, General Correspondence [Formerly Classified] 1936-1944, Box 1, Folder 1-1(1) Developments. Bureau of Yards and Docks
- 1921 Activities of the Bureau of Yards and Docks, Navy Department, World War 1917-1918, Washington: Government Printing Office.

Commander, Navy Region Hawaii

- 2000 Pearl Harbor Naval Complex, Cultural Resources Management Plan, Pearl Harbor, HI.

Commander, Navy Region Hawaii

- 2002 Integrated Cultural Resources Management Plan, Pearl Harbor Naval Complex, Pearl Harbor, HI.

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Contractors Pacific Naval Air Bases

n.d. *Technical Report and Project History, Contracts NOy-3550 and NOy 4173:* On microfilm at Pacific Division Naval Facilities Engineering Command Library.

Emory, Raymond, USN (Retired)

1999 Personal interview about the attack on Shipyard during the December 7<sup>th</sup> attack. From his ship, the USS Honolulu, he observed the smokestack of Facility 8 being struck by anti-aircraft fire. Provided by Jeff Dodge, Pacific Division, Naval Facilities Engineering Command.

Fogel, Frederick F.

1980 Historic Resources Inventory Form for Bldg #8. Prepared by Pearl Harbor Naval Shipyard, Facilities Planning & Programming for State Historic Preservation Office.

HABS/HAER Documents

var. dates For those resources on the Navy database at the time the CRMP (Contract No. NB62742-93-D-0502) was prepared, the HABS/HAER numbers assigned have been included in the electronic database as an additional field, as noted in Appendices: Pearl Harbor Naval Complex Cultural Resources Management Plan, 1998, p. A-6.

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1992 Historic Preservation Documentation Program, photocopied document dated 15DEC92 including Appendix B Historic Inventory.

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n.d. 75<sup>th</sup> Diamond Jubilee Anniversary: A brief history of Pearl Harbor in its relation to the U.S. Navy. Brochure provided by Jeffrey Dodge, Pacific Division Naval Facilities Engineering Command.

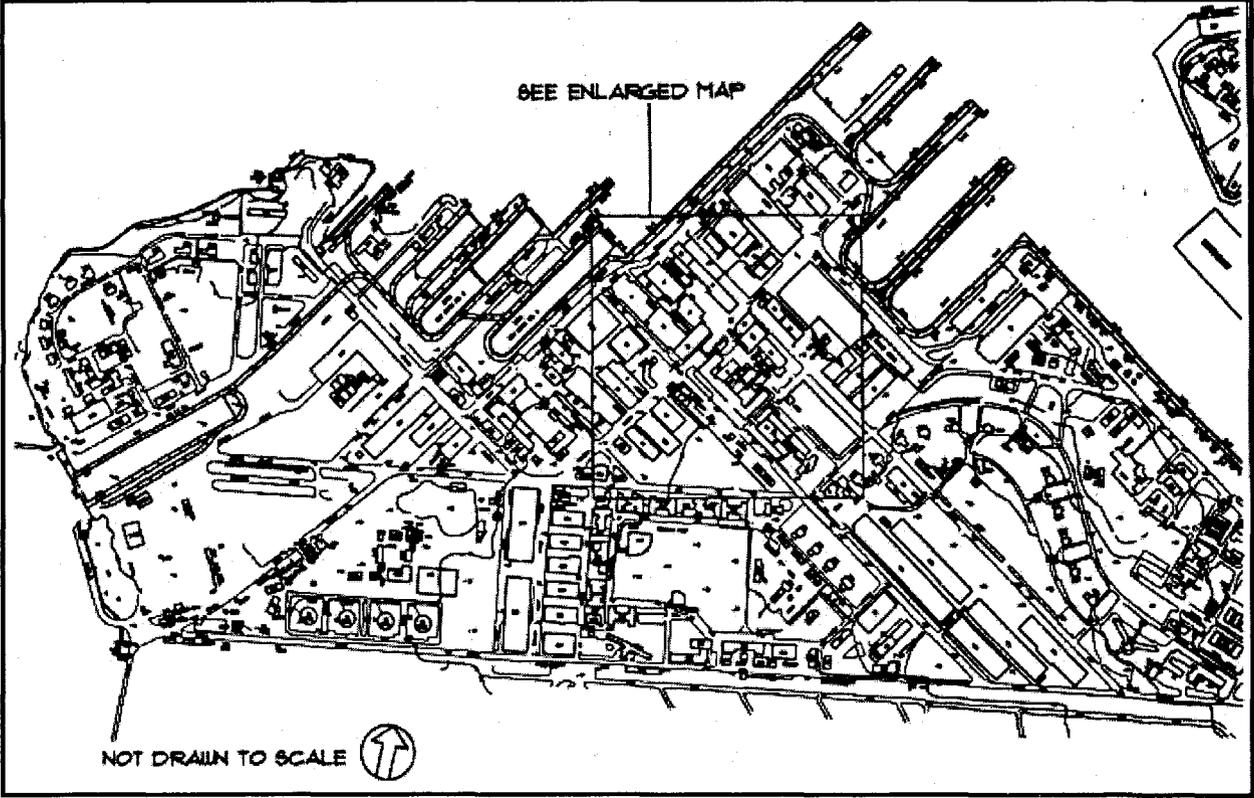
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**Project Information:**

Photo documentation and recordation of this facility by the Navy has been done in anticipation of 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 A.I.A., Historic Preservation Specialist at the Pacific Division, Naval Facilities Engineering Command (NAVFAC EFD Pacific). The photographic documentation was undertaken by David Franzen, photographer. Ann Yoklavich and Lawrence Shelvey, Architectural Historian, of Mason Architects, Inc. prepared the written documentation. The field work and research was conducted for this report between July 2001 and December 2001.

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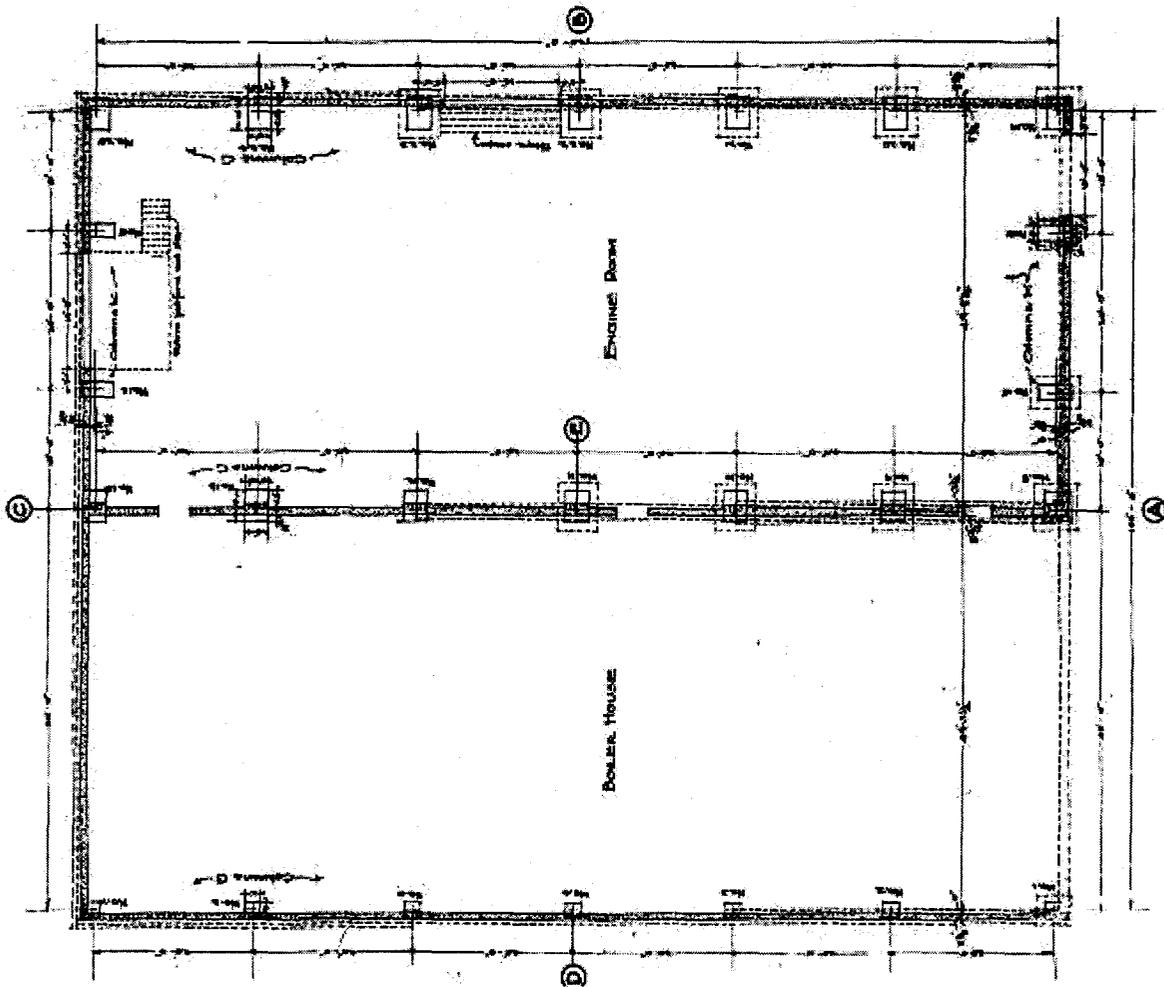
Shipyard Map





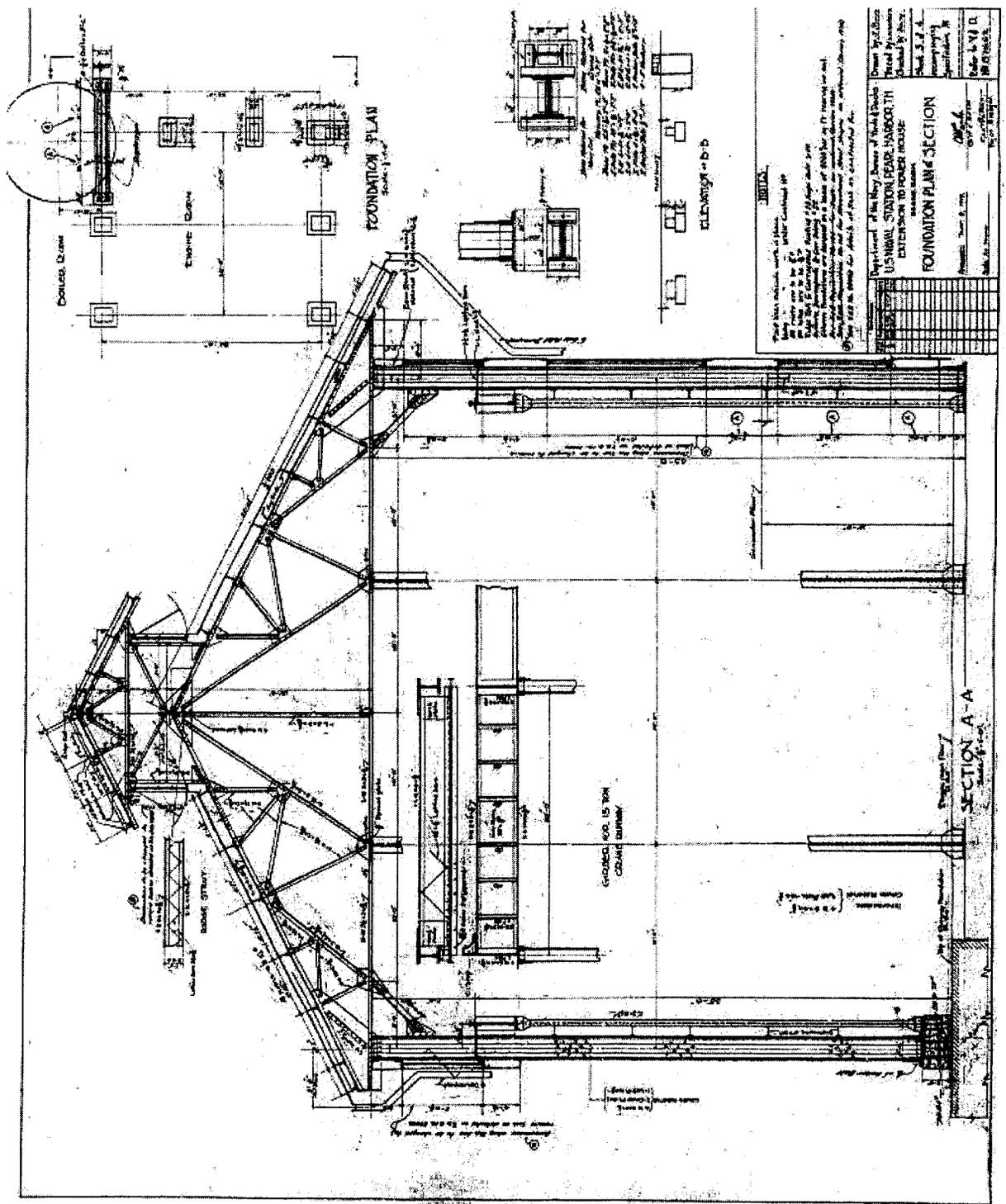
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Original Foundation Plan (Drawing No. I-24, dated Dec. 1911) (reduced, not to scale)



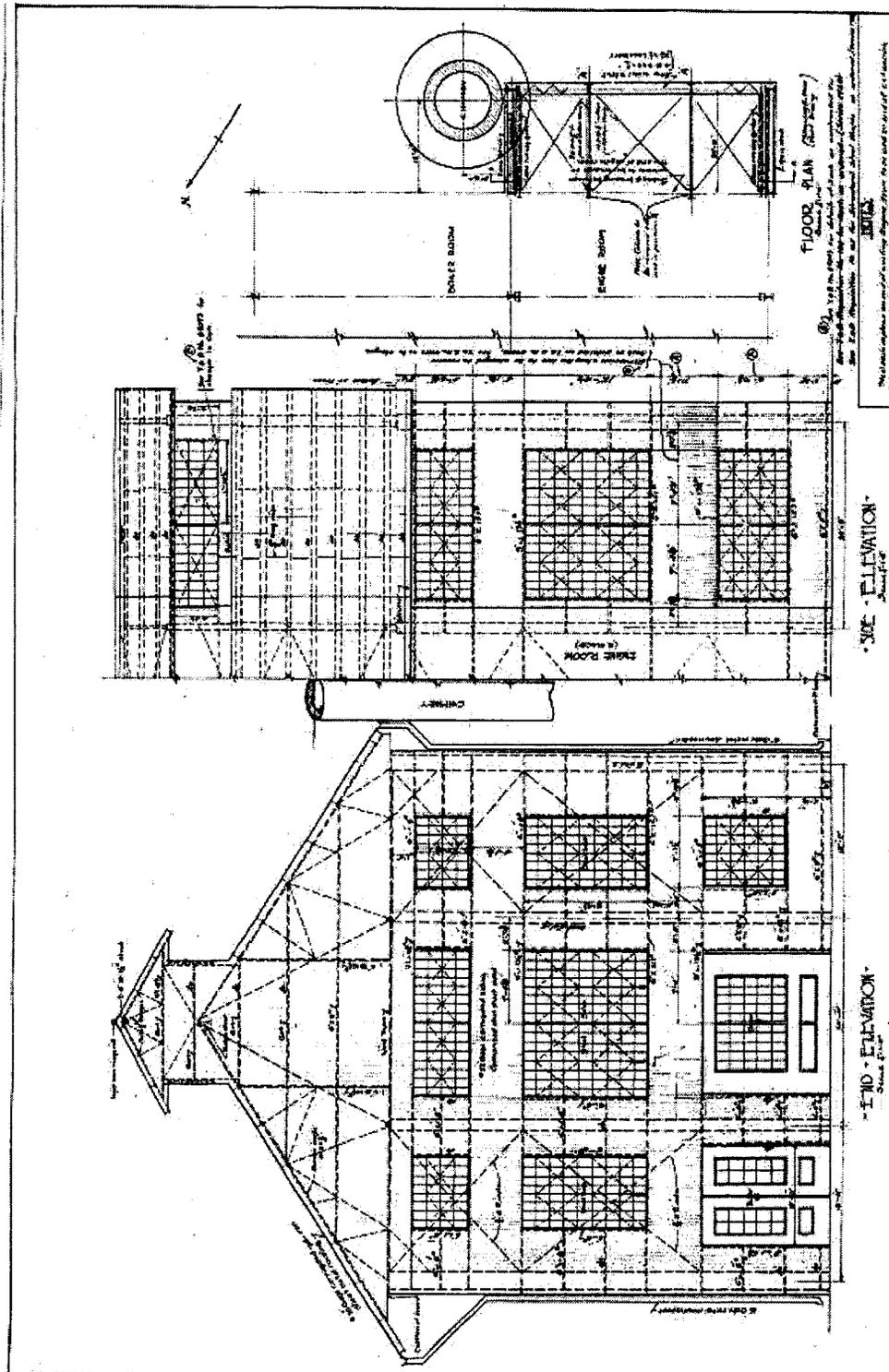
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**Foundation Plan and Section of Engine Room Extension (Drawing No. 87652,  
 dated 11/8/1919) (reduced, not to scale)**



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**Elevations and Plan of Engine Room Extension (portion of Drawing No. 87653,  
 dated 11/8/1919) (reduced, not to scale)**



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**Elevations - 1958 Rehabilitation Project (portion of Drawing No. 808664,  
 dated 6/6/1958) (reduced, not to scale)**

