HISTORIC STRUCTURE REPORT

THE OLD POINT LOMA LIGHTHOUSE
CABRILLO NATIONAL MONUMENT
SAN DIEGO, CALIFORNIA

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F O R E W O R D

This report includes the Administrative, Historical, and Architectural Data Sections of the Historic Structure Report as required by the Planning (Task) Directive for Package 123. The Historic Structure Report written by F. Ross Holland in 1964, previously unpublished, has been included at the request of the Western Regional Office and has been edited by Regional Historian Gordon Chappell. It incorporates additional information Historian Holland has obtained over the years in the the course of other lighthouse research. The Architectural Data Section has been designed to satisfy the architectural research requirements for the preservation of the Old Point Loma Lighthouse, Cabrillo National Monument. This research has as its culmination the recommended treatments for stabilization and preservation of the lighthouse.

I would like to take this opportunity to thank those people who offered their help during the research and writing of the Architectural Data Section. Harold LaFleur gave me continuous help and guidance from the initial on-site investigations to the review of the final report. Douglas Ashley, although not directly involved with this project, has given me help with the organization of the report. David Snow contributed a great amount of help with the architectural drawings.

The park staff including former Superintendent Thomas Tucker and Chief of Interpretation Terry DeMattio were very helpful in providing assistance and cooperation.

I would like to thank Dr. William W. Austin, Department of Materials Engineering, School of Engineering, North Carolina State University at Raleigh, and Mr. Ray I. Lindberg, Director of Corrosion

Engineering, Metallurgical Research Division, Reynolds Metals Company for their valuable advice. Mr. Lindberg had been of continual help throughout the writing of the report.

I wish to express my appreciation to these people and others who helped in the completion of this report.

HGL

I. ADMINISTRATIVE DATA

ADMINISTRATIVE DATA: This Historic Structure Report, as part of development package 123, covers the preservation of the Old Point Loma Lighthouse, Cabrillo National Monument.

Structure Name	Location	Park File No. and LCS. No.
Old Point Loma Lighthouse	Cabrillo National Monument, San Diego California	Building No. 1

Cabrillo National Monument consists of 144 acres at the end of Point Loma and is surrounded on three sides by the Pacific Ocean. The monument was established to commemorate Juan Rodriguez Cabrillo's exploration and landing on what is now the West Coast of the United States. It is not known if Cabrillo ever set foot on monument land; however, the view of the harbor and the ocean is described as one of the outstanding harbor scenes of the world.

The principal historic structure at the monument is the Old Point Loma Lighthouse. It is of Cape Cod architectural style, one of the first eight lighthouses constructed on the West Coast of the United States. It may be the only historic lighthouse of that vintage and style to be preserved in perpetuity on the West Coast and it is of national significance in its own right. It is listed on the National Register and the List of Classified Structures as having the first order of significance.

The lighthouse was constructed in 1854, lighted in 1855, and operated until 1891. The most logical period of interpretation should be circa 1887. This is the year the masonry walls reportedly were painted on the exterior with white paint. It has been determined that these walls should stay painted to protect them from deterioration.

The master plan calls for the structure to interpret the life style and living conditions of the 19th century lighthouse keeper and family (page 45, Master Plan, approved July, 1976).

The proposed treatment of the structure is preservation, including some emergency measures to prevent further deterioration. This treatment is consistent with management policies. "Preservation involves the application of measures to sustain the existing terrain and vegetative cover of a site and the existing form, integrity, and material of an object or structure. It includes initial stabilization work, where necessary, as well as ongoing maintenance." (Chapter V, page 13, Management Policies of the National Park Service).

There are no cooperative agreements involved or required for the Old Point Loma Lighthouse.

II. HISTORICAL DATA

A. Introduction

"Nothing indicates the liberality, prosperity or intelligence of a nation more clearly than the faciliites which it affords for the safe approach of the mariner to its shores." -- Report of the Lighthouse Board, 1868.

"The lighthouse and lightship appeal to the interest and better instinct of man because they are symbolic of never-ceasing watchfulness, of steadfast endurance in every exposure, of widespread helpfulness. The building and the keeping of the lights is a picturesque and humanitarian work of the nation." -- George R. Putnam

The Point Loma Lighthouse was one of the first eight lighthouses on the United States' Pacific Coast. All eight lighthouses were constructed between 1852 and 1854 and were built under one contract by one construction firm. These eight lighthouses were erected at a time when two significant events were affecting United States lighthouses: (1) the administration of lighthouses was undergoing drastic revision, and (2) a new method of illuminating lighthouses was being introduced.

B. Administrative Background of the Lighthouse Service

Prior to the American Revolution the individual colonies erected, maintained, and operated the lighthouses within their territories. On August 7, 1789, Congress passed an act abrogating to the central government responsibility for lighthouses, as well as other aids to navigation, within the United States. Between 1789 and 1795 the states turned over their lighthouses to the Federal Government. Until 1820 the duty of supervising lighthouses and other navigational aids was vested in the Commissioner of Revenue, except for the period 1802-1813 when the Secretary of the

Treasury, Albert Gallatin, assumed superintendency of lighthouses. In 1820 the Fifth Auditor of the Treasury Department was given the task of supervising all aids to navigation, and for the next 32 years, until 1852 when the Lighthouse Board was established, only one man occupied the office of Fifth Auditor. He was Stephen Pleasanton, and in time he became popularly known as the General Superintendent of Lights.

During the reign of the Fifth Auditor as Superintendent of Lights, it is quite apparent that aids to navigation failed to receive vigorous leadership. In 1837 Congress became unhappy over the shoddy construction of several lighthouses and authorized the Board of Navy Commissioners to inspect new lighthouse projects. Ten years later the construction of six lighthouses was placed under the Corps of Topographical Engineers. During the controversy over the change in lighting systems, the Fifth Auditor until the very last was a staunch advocate of the soon outmoded Argand lamp and parabolic reflector. His argument was simply that the initial cost was cheaper, despite the fact it had been demonstrated that the Fresnel system was far superior in every other respect.

Dissatisfaction with lighthouse administration was expressed in 1851 when a board was appointed to study the lighthouse problem. A long report resulted which recommended, among other things, that a Lighthouse Board be appointed to administer navigational aids in the United States. The recommendation was acted upon, and on October 9, 1852, the nine-member board was established with the Secretary of the Treasury as the president and Admiral William B. Shubrick as its first chairman. Composed mainly of military persons, the board did have two civilian members: A. D. Bache, Superintendent of the Coast Survey, and Joseph Henry, first Secretary of the Smithsonian

Institution. The board had an army secretary and a navy secretary, who took care of routine administration of aids to navigation, and it divided the country into twelve districts; the Pacific Coast was designated the 12th Lighthouse District. An Inspector was appointed in each district and he was "charged with building the lighthouses, with keeping them in repair, and with the purchase, the setting up, and the repairs of the illuminating apparatus."[1]

The direct supervision of lighthouses devolved upon the various Collectors of Customs and those who had lighthouses in their district held also the appointive job of Superintendent of Lighthouses. By 1854 sixty-three collectors in the United States were acting also as Superintendents of Lights.[2]

With the establishment of the Lighthouse Board in 1852, the practice of collectors being appointed as Superintendents of Lights was continued; the appointment of these superintendents was done as lighthouses appeared in each of their districts. In May 1854, with the lighthouses at Point Pinos in Monterey and Point Loma near San Diego nearing completion, the Secretary of the Lighthouse Board requested the Secretary of the Treasury to designate the collectors of customs at those two ports as Superintendent of Lights in their districts. The Secretary of the

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1. Arnold B. Johnson, The Modern Lighthouse Service (Washington: 1890), pp. 14, 20-23; George R. Putnam, Lighthouses and Lightships of the United States (Boston; 1917), pp. 31-33, 38-39, 42-46; S. Pleasanton to W. L. Hodge, Washington, Nov. 29, 1852, Old Lighthouse Records: Bids, Contracts and Proposals, 1840-1855, United States Coast Guard, Record Group 26, National Archives. Hereinafter cited as USCG, RG, and NA.

2. Putnam, Lighthouses and Lightships, pp. 29-31.

Treasury complied. O. S. Witherby, the collector in San Diego, for example, received his appointment the following August, and became responsible for the lights at San Diego and Point Conception.[3]

C. Lens and Illuminants

Any discussion of lighthouses demands, at the outset, at least an elementary understanding of "what makes them go" -- that is, the means by which they are illuminated.

Until the 1850s, nearly every lighthouse in the United States used a number of Argand lamps for illumination. These lamps were placed "side by side around the circumference of a circle," and the number of lamps used depended upon the arc of the horizon it was desired to illuminate. For years a bulls-eye magnifying lens was used on each lamp, but these lenses were practically useless, and in 1840 they were removed, leaving the parabolic reflectors.

This system, which had become known as the American system, had but one virtue--the lamps were inexpensive. On the other hand, they were complicated, used a vast amount of oil, required constant attention, and, most important of all, produced relatively little light.[4]

In 1822 Augustin Fresnel, a French physicist, developed a lens apparatus which was to revolutionize lighthouse illumination.

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3. Thornton A. Jenkins to James Guthrie, Washington , May 25, 1854, Letters from Executive officers, v. 3; O. S. Wetherby to T. A. Jenkins, San Diego, August 26, 1854, Lighthouse Board, Engineer and Inspector, 12th Dist., Feb. 1853-June 1856, USCG, RG 26, NA.

4. John S. Conway, The United States Lighthouse Service, 1923 (Washington: 1923), pp. 29-30; Johnson, The Modern Lighthouse Service, p. 50.

POINT LOMA AND ENTRANCE TO SAN DIEGO HARBOR, FROM CORONADO BEACH, CIRCA 1889

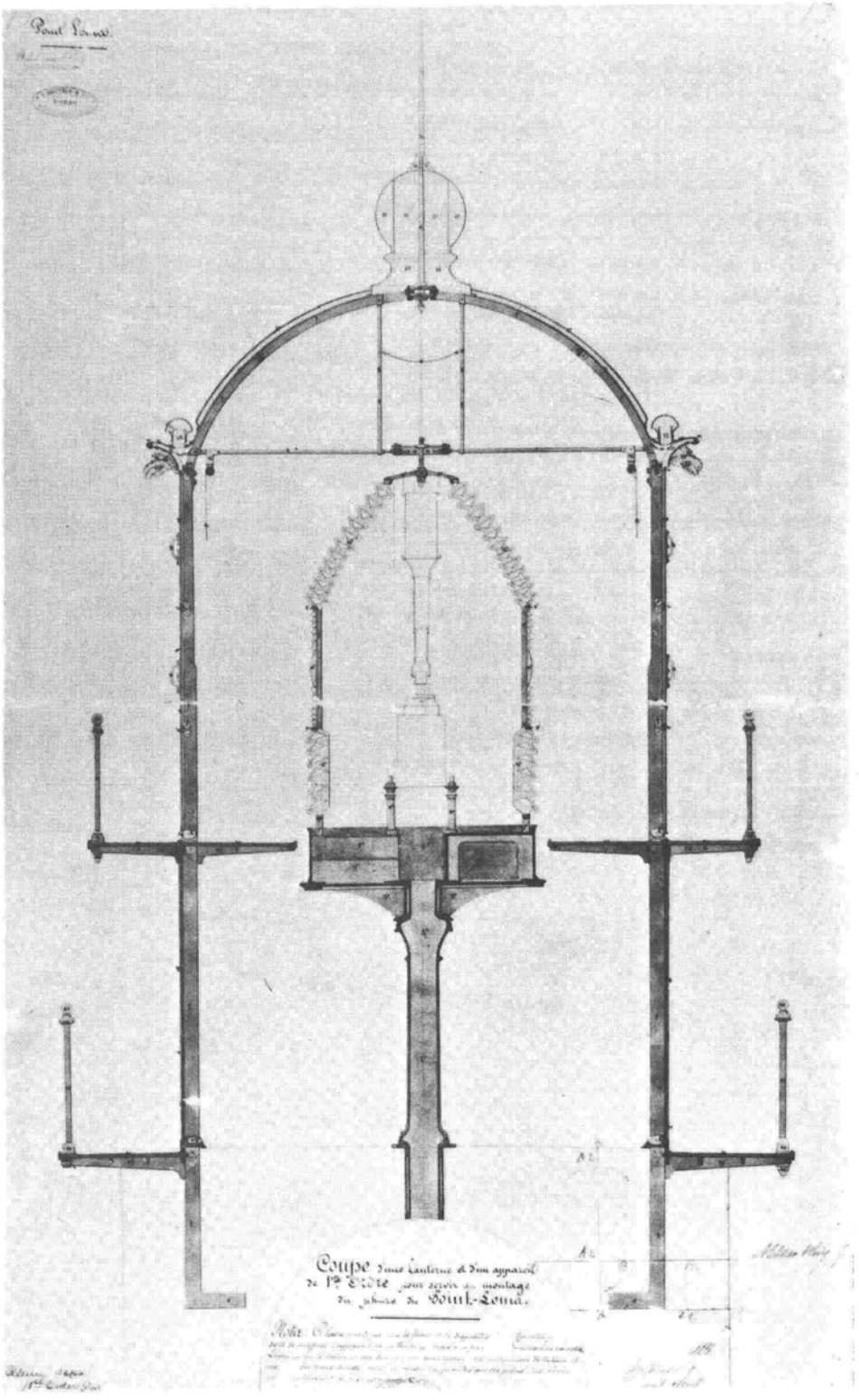
There are two principles of lighthouse illumination. The old, or American, system was a catoptric, or reflecting system. The new system used the dioptric or refracting principle. Most dioptric systems use also some principle of reflecting; consequently, they are called catadioptric systems.[5]

A Fresnel lens is like a glass barrel whose outer surface is made up of prisms and bulls-eyes. In a revolving or flashing light, the bulls-eyes are surrounded by curved, concentric prisms, concentrating the light of a central lamp into several individual beams, radiating like the spokes of a wheel. In the fixed, or steady light, the bulls-eye becomes a continuous "lens belt," with the prisms parallel to it, producing an uninterrupted, horizontal sheet of light.

Fresnel lenses were classified into seven orders. The order was determined by focal distance--that is, the distance from the illuminant to the lens. Orders of Fresnel lenses are as follows:

Order	Focal Distance		Overall Lens Size
	Millimeters	Inches	Diameter
First	920	36.2	6'
Second	700	27.6	4'6"
Third	600	19.7	3'2"
Three and a half	375	14.7	2'4"
Fourth	250	9.8	1'6"
Fifth	187.5	7.4	1'2"
Sixth	150	5.9	10"

5. Conway, The United States Lighthouse Service, 1923, p. 30.



FIRST ORDER ILLUMINATING APPARATUS
ORIGINALLY ORDERED FOR POINT LOMA,
APPARENTLY USED AT CAPE FLATTERY.
Photograph from Smithsonian Institution

The United States was slow to adopt the Fresnel lens and for years a controversy raged in this country over the merits of the old and new systems. Finally, in 1841 the United States purchased its first Fresnel lens and installed it at Navesink Light, New Jersey. Ten years later there were just two light stations in the country which had Fresnel lenses.[6] On March 3, 1851 Congress approved an appropriation bill which included permission for the Secretary of the Treasury to place the Fresnel lens system in new lighthouses, in lighthouses not having lenses, and in lighthouses requiring new ones. A year later the board created to study the lighthouse system in the United States said: "The Fresnel lens is greatly superior to any other mode of lighthouse illumination, and in point of economy is nearly four times as advantageous as the best system of reflectors and Argand lamps." In May 1852 the first chairman of the Lighthouse Board said that the "Fresnel Lens in useful effect, brilliancy and economy is superior in its different orders to any combination, number and size of the best parabolic reflectors."

Despite this strong support of the Fresnel lens, the Fifth Auditor of the Treasury as late as 1852, in what was one of his last acts as General Superintendent of Lights, recommended that the proposed lighthouse at San Diego be illumined with twelve lamps and twelve 16-inch reflectors.[7]

Pleasanton's reluctance to give up his Argand lamps explains, to a great extent, the slowness of the Untied States in

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6. Ibid.

7. U.S. Lighthouse Board, Documents Relating to Lighthouses, 1789-1871 (Washington: 1871), pp. 550, 586; W. B. Shubrick to Thomas Corwin, Washington, May 8, 1852, Letters from Executive Officers, v. 3, 1853; Stephen Pleasanton to W. L. Hodge, Washington, Nov. 29, 1852, Old Lighthouse Records: Bids, Contracts & Proposals, 1840-1855, USCG, RG 26, NA.

adopting the infinitely superior system. Stephen Pleasanton may well go down in history as the outstanding obstacle to progress in the old lighthouse service.

With the establishment of the Lighthouse Board in 1852, however, the proponents of the Fresnel apparatus had completely won out, and they were anxious to carry out the intention of Congress and install the new system. The board soon began to install the Fresnel lenses in lighthouses, and by 1859 the Argand lamp and reflector system had been almost entirely replaced in lighthouses throughout the country. Despite the higher initial cost of the system, the Fresnel apparatus lenses paid for themselves within a few years.[8]

Not only that, but with Fresnel equipment it was next to impossible for a lighthouse keeper to "goof." As one historian succinctly summed it up,

> The adoption in this country of the [Fresnel] Lenticular apparatus made it possible for a light keeper of average capacity to keep a good light, and impossible for him to keep a bad one, unless by violation of plain rules and avoidance of routine duties.[9]

It should be remembered that developments taking place regarding lighthouses on the West Coast were playing against a background of administrative change in this country's management

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8. Conway, Lighthouse Service, p. 31; Johnson, The Modern Lighthouse Service, p. 50; Putnam, Lighthouses and Lightships, p. 193.

9. Johnson, The Modern Lighthouse Service, p. 50.

of its aids to navigation. The Lighthouse Board wasn't established until October 1852. Due to this situation all lights on the California and Oregon coasts were "under the special direction of the Secretary of the Treasury until transferred, December 22, 1852, to the Lighthouse Board."[10] And as the country's lighthouses were converting to the Fresnel lens system at the same time, some confusion resulted as to the order, or size, of these early lights. It would seem probable that some sort of an "order" classification, now long forgotten, was set up to describe various sizes of Argand installations, for the Coast Survey recommended a first order lamp for Point Loma. Most likely A. D. Bache, who made the recommendation, was thinking in terms of the Argand lamp and parabolic reflector, the system the Fifth Auditor recommended for the Point Loma light. In the contract negotiated by the Secretary of the Treasury for the construction of the eight lighthouses it was at first stipulated that all eight would have lamps and parabolic reflectors. In quality and intensity of light, one observer remarked, the third order Fresnel system was equivalent to a first order Argand lamp system. This imperfect understanding of orders of light was apparently the cause for the early reports and papers concerning the west coast lights to be generously sprinkled with references to a first order system for the Point Loma light.[11]

An amendment to the contract eliminated the Argand lamps and provided for the installation of the Fresnel lens; consequently, by the time the lighthouses on the west coast were completed and ready to receive their lights the question was settled and Fresnel's

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10. Report on the State of the Finances, 1851-1852, p. 86.

11. A. D. Bache to Thomas Corwin Washington, Nov. 22, 1851; "Proposed and Authorized Lights for California & Oregon, Table C," and Contract between Washington A. Bartlett and L. Sautter & Co., Sept. 21, 1852, all in Letters from Executive Officers, v. 3, 1853, USCG, RG 26, NA. See also Putnam, Lighthouses and Lightships, p. 122.

illuminating system was installed in each of the structures. The first lens on the West Coast was at the Alcatraz lighthouse which was lighted in 1854; it had been manufactured in Paris, France by the L. Sautter Company.

For many years the lamps in American lighthouses burned whale oil. In the early 1840s this was still a satisfactory fuel since the price was only 55¢ per gallon. Soon afterwards, however, the supply of sperm oil began to diminish, and at the same time the use of sperm for manufacturing purposes increased. The result was a steady rise in price, and by 1854 sperm oil brought $1.38 per gallon. This increase was of concern to the Lighthouse Board, and they soon began to look about for a substitute fuel. They turned first to colza, or rapeseed oil. In 1852 Lieutenant Washington A. Bartlett, U.S.N., was in France contracting for lenses for the proposed Pacific Coast lighthouses, and while there he gathered information on the use of colza oil as an illuminant. Subsequent tests by the Lighthouse Board revealed that colza oil was ideally suited for lighthouse purposes; it was as good as sperm and cost only half the price. By the late 1850s--as in the case of Point Conception Lighthouse--colza oil was being introduced in United States lighthouses. In 1861, 5,000 gallons were purchased and in 1862, 12,000 gallons. There was a fly in the ointment, however; the amount of wild cabbage, from which rapeseed was obtained in the United States, was insufficient to supply the needs of the Lighthouse Board. The board at first had thought that by creating a market farmers would be encouraged to grow more of the plants. But the farmers failed to follow the script and grew only enough of the plants to provide for domestic use "and by no means enough for general adoption in the light-house service."[12]

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12. Secretary of the Treasury, Report on the State of the Finances, 1853-54, (Washington: 1854) p. 295; Report on the State of the Finances, 1868 (Washington: 1868), p. 309; Johnson, The Modern Lighthouse Service, 54; Bartlett to William L. Hodge, Paris, France, Dec. 13, 1852, USCG, RG 26, NA.

Meanwhile, further experiments were being conducted with lard oil, Chairman of the Committee on Experiments being Joseph Henry. Professor Henry personally conducted the experiments with lard oil and reported that he found it to be highly satisfactory in the Fresnel apparatus and in the Franklin lamp "in which the combustion is carried on at a high temperature. . . ." Moreover, lard oil yielded more light than sperm oil. Tests had been run on lard oil before, but as a fuel it was found unsatisfactory because the first experimenters, as Professor Henry later found, had used too low a combustion rate. As a result of Henry's report lard oil was soon introduced, and by 1867 it had supplanted sperm oil as the principal illuminant in lighthouses. Colza oil continued to be used in smaller lamps.[13]

In the 1870s experiments were once again conducted on a better fuel. This time the substance was kerosene, or mineral oil as it was more popularly known then. It was found satisfactory and began being substituted in 1880. By 1885 it was in general use in lighthouses. In 1880 the lighthouse service purchased

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13. Secretary of the Treasury, Report on the State of the Finances, 1864 (Washington: 1864), p. 173; Report on the State of the Finances, 1867 (Washington: 1868), p. 194; Putnam, Lighthouses and Lightships of the United States, pp. 185-186. Some people contend that whale oil obtained from the whaling establishments at Ballast Point was used at the nearby Point Loma lighthouse. (Indeed, it has been claimed that various other lighthouses along the west coast had local sources of oil.) Such was not the case. Oil for all lighthouses was purchased under one contract by the Lighthouse Board, and it had to meet exacting specifications. It was purchased in the east and sent to the Pacific Coast. Moreover, sperm oil was used and the sperm whale was not taken by the San Diego shore whalers, or other shore whalers on the west coast. See Johnson, The Modern Lighthouse Service, p. 54; Hartman Bache to Thornton A. Jenkins, San Francisco, Nov. 14, 1855, L. H. B. Engineer and Inspector, 12th Dist., Feb. 1853-June 1856, v. 23, USCG, RG 26, NA.

48,000 gallons of mineral oil. Nine years later the annual purchase totaled over 330,000 gallons as compared with 16,000 gallons of lard oil in the same year. Kerosene was introduced in the Point Loma light in 1882, but not until 1888 in the Point Conception lighthouse.[14] Kerosene remained the principal illuminant in most west coast lighthouses until the 1920s.[15] The new Point Loma Lighthouse, for example, was converted from kerosene to electricity in 1926.[16]

D. Selection of Lighthouse Sites on West Coast

Agitation for the construction of aids to navigation on the West Coast came shortly after Mexico's cession of California to the United States, and reportedly as early as 1848 Congress authorized the construction of lighthouses at Cape Disappointment and at New Dungeness on the Washington Coast and the placing of buoys in the Columbia River. The pitiful sum appropriated, $15,000, was hardly realistic, and nothing was done. Two years later, Congress was in a more serious frame of mind and solicited the advice of the Secretary of the Treasury, Thomas Corwin. The result of his advice became apparent on September 28, 1850, when Congress authorized construction of six lighthouses on the coast of California; at Alcatraz Island and Battery, or Fort Point, in San Francisco Bay; in the Farallon Islands; at Point Pinos near Monterey; at Point Conception; and at San Diego; three lighthouses on the Washington coast; at Cape Flattery, New Dungeness, and Cape Disappointment; and 12 can buoys in the Columbia River.

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14. Johnson, The Modern Lighthouse Service, p. 55; Putnam, Lighthouses and Lightships of the United States, p. 186; Lighthouse Board, Annual Report, 1882 (Washington: 1882), p. 58.

15. Conway, The United States Lighthouse Service, 1923, p. 32.

16. Robert Adamson, "Point Loma's Century of Light," San Diego Historical Society Quarterly, 1 (1955):56.

In March 1851, two more lighthouses were authorized, one at Umpqua River, Oregon, and the other at Humboldt Harbor, California. The appropriation on both bills totaled $158,140. Although more realistic, this sum, too, was inadequate. The Secretary, however, decided to use the money thus far appropriated to go ahead with the construction of eight lighthouses on the West Coast. He entered into an agreement with a contractor to erect the eight, but as it turned out the contractor could not post the $75,000 security bond required by the Treasury Department and consequently had to relinquish his contract. As of April 24, 1852, there matters stood, so far as Pacific Coast lighthouses were concerned.[17]

The selection of sites for the various lighthouses on the West Coast was left in the hands of the Coast Survey. On May 29, 1851, the first issue of San Diego's first newspaper, the Herald, carried the announcement that "The officers of the U.S. Coast Survey are now actively engaged in the survey of the Harbor preparatory to the selection of a site for the Government Light House at this point." The following month the Chief Topographer of the party, A. M. Harrison, wrote to the Superintendent of the Coast Survey, A. D. Bache, recommending a spot near the end of Point Loma, 422 feet above sea level, as the site for the lighthouse. He said materials could be landed at La Playa and easily hauled to the site. It would be necessary to bring all materials for the structure from some other place, since there was "nothing in the region which could be turned to advantage." As an afterthought,

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17. Putnam, Lighthouses and Lightships, p. 121; Lighthouse Board, Documents Relating to Lighthouses, 1789-1871, pp. 867-68; H. Hamlin to T. Corwin, Washington, Sept. 19, 1850, Letters from Executive Officers, v. 3, 1853; "Opinion of the Court of Claims in Favor of the Claims of Francis A. Gibbons and Francis X. Kelly," MS, 34th Congress, 1st Session, USCG, RG 26, NA.

Harrison noted that during his stay the fogs were frequent and heavy. Bache wrote back to Harrison inquiring as to whether the high point recommended would not result in the fog too frequently interfering in the normal functioning of the light. Harrison replied that the Point Loma site was the best one. Bache then concurred and transmitted the site recommendation to the Secretary of the Treasury. It is interesting that 40 years later, in 1891, the Point Loma light was moved to a much lower point, solely because of the fog which often obscured the higher light.[18] Bache's hunch was correct. In Harrison's defense, however, it should be mentioned that the site he chose was the only one which would permit the lighthouse to serve as a coastal light and as a harbor light, both of which San Diego needed.

Ownership of the site selected and concurred in by the Secretary of the Treasury caused little concern. In 1852 the Secretary of War recommended to President Millard Fillmore that a military reservation be set aside which was

> To include that portion of the Peninsula lying on the west side of the entrance to the Harbor, which shall be included between the southernmost point of the peninsula (Punta de Soma [Loma]) and a line drawn across said peninsula from the harbor to the Ocean at the distance of one and a half miles above Punta de Guanos [Guijarros].

The President approved the recommendation, and so ordered the establishment of the reservation. This reservaton included the site

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18. San Diego Herald, May 29, 1851; Extracts from the Report of the Superintendent of the Coast Survey in Relation to Lighthouses, Beacons, Buoys, etc. (Washington: 1851), pp. 515-516.

for the Point Loma lighthouse which the Coast Survey had selected; the site, however, was not reserved for lighthouse purposes until September 11, 1854. Ownership of Point Loma was claimed by San Diego, but the question was settled in 1872, at the time when the city was granted her pueblo lands.[19]

E. The Contract and the Contractors

On April 24, 1852, Secretary Corwin wrote that the contractor initially engaged to erect lighthouses on the West Coast failed to raise the required $75,000 security bond and consequently had to forfeit his contract. He added that a substitute contractor had not yet been found.[20]

The contract Corwin referred to had been let to one John McGinnis, who until March 31, 1851, had been Chief Clerk of the Treasury Department. At that time he changed jobs and became head of the Bureau of Lighthouses and Marine Hospitals, an interim bureau established principally to manage lighthouse business on the West Coast.

McGinnis later testified that shortly after taking over the new bureau he began feeling the infirmities of age and desired to retire, but he was in need of money to see him through his declining years. He approached Secretary of the Treasury Thomas Corwin and suggested that the contract for the West Coast

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19. C. M. Conrad, Sec. of War, to President of the United States, Washington, Feb. 24, 1852; J. H. Weeden to R. S. Williamson, San Francisco, Aug. 20, 1874; R. S. Williamson to Joseph Henry, San Francisco, Aug. 28, 1874, all in USCG, RG 26, NA; Claim of Gibbons and Kelly, U.S. Senate Executive Document No. 53, 40th Congress, 3rd Session; Francis R. Holland, Jr., "The Ownership of Point Loma," Western Explorer, 2 (1962): 33-37.

20. Lighthouse Board, Documents Relating to Lighthouses, 1789-1871, p. 867.

lighthouses be let to him, at which time he would retire. McGinnis said he hoped to make $8,000 to $10,000 on the contract. Evidently a bargain was struck for McGinnis resigned and Assistant Secretary William L. Hodge let the contract to build West Coast lighthouses to him. From this point on the contract becomes tangled in venal machinations and later accusations of impropriety, involving not only McGinnis, but also Secretary Corwin and Assistant Secretary Hodge. The situation became so scandalous that a Senate investigation was held. It is not necessary at present to go into this aspect of the story of the building of West Coast lighthouses. The important thing is that a contract was let and a copy of this contract with specifications and plans has been preserved in the National Archives with the records of the Senate investigating committee. Since no specifications were found for the contract which was later let to Gibbons and Kelly, the specifications with McGinnis' contract have an especial importance. The plans accompanying the contract given McGinnis do not conform in every detail with the plans used by the final contractors but the differences are minor. One point on the plans, however, is worth noting: the small room off the hallway on the second or attic floor is labelled "closet". In the specifications this room is also referred to as a closet.[21]

Apparently events transpired fairly rapidly at that point, for within a week a formal agreement was entered into with two contractors to erect eight lighthouses on the Pacific Coast. This contract, after many trials and tribulations, was destined to be fulfilled.

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21. Journal, "Proceedings in Senate," August 14, 1852; Testimony of John McGinnis, No. 3, August 17, 1852, both in SEN 32 A-E17, NA.

The successful contracting firm was composed of two partners, Francis A. Gibbons and Francis X. Kelly, both of Baltimore, Maryland. The agreement they entered into with the government, dated April 20, 1852, stipulated that the lighthouses to be constructed were to be at Alcatraz Island, Battery or Fort Point, Southeast Farallones Island, Monterey, Point Conception, and San Diego on the California Coast, and at Cape Disappointment on the Oregon Coast. The specific site at each place was to be the one designated by the United States Coast Survey. For each of the seven California Lighthouses the contractors were to receive $15,000, payable as each structure was completed and accepted, and for the Cape Disappointment light they were to receive $31,000; in other words, the eight lighthouses were to cost $136,000. The lighthouses were to be completed by November 1, 1853; but in a supplement to the contract the time was extended to May 1, 1854.[22]

The lighting system in each of the lighthouses was to be Argand lamps with 16-inch parabolic reflectors, but should it so desire the government would have the right to furnish the Fresnel lens "to any or all of said lighthouses." Like their predecessor, Gibbons and Kelly were to post a $75,000 penal bond. When the bond was executed and the illuminating equipment shipped to the West Coast, they were to receive a $35,000 advance.

The contractors soon began laying plans to construct the lighthouses. They purchased in Baltimore a barque named the Oriole, 1,223 tons burden, to transport materials and workers to the West Coast. They hired 14 mechanics in Baltimore: 2 bricklayers, 2 carpenters, one painter, one blacksmith, one plasterer and bricklayer, 2 stone-masons, and 5 workmen. In

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22. Claim of Gibbons and Kelly, pp. 12-16 and 89.

addition, William H. Hemmick was employed as clerk and disbursing agent; Roger J. Mahon was "to superintend the building of the eight lighthouses . . . ;" and William J. Timanus was appointed to act as contractors' agent, keeping the books and making "all disbursements and purchases connected with their works."[23]

A contract was entered into, requiring each of the mechanics to go to the West Coast and to remain there until the eight lighthouses were completed. The time stipulated in the workers' contracts conformed to those mentioned in the agreement Gibbons and Kelly had made with the Treasury Department.

Material for the lighthouses was collected and loaded onto the Oriole. It included thousands of feet of yellow pine flooring, doors and frames, window frames, shutters, cupboards, mantel pieces, frames for kitchens, rolls of tin roofing, cut stone decking for the lanterns, and hardware, as well as oils, paints, and glass--everything, according to Superintendent Mahon, for building

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23. Ibid., pp. 20, 30, 58, 61, 65, and 74. Some of the "mechanics" were: Hugh Hamilton, master bricklayer; William C. Nolan, master painter; and Edward P. Porter, master carpenter. Timanus, who was 46 years old in 1855, is somewhat of an enigma. He testified that he was a contractor and builder of masonry. He said he personally superintended the construction of every lighthouse except the one at Humboldt Bay. When the construction party landed at San Diego to erect the Point Loma Lighthouse, Timanus was their spokesman. The local paper listed him as the on-site representative of Gibbons and Kelly. No mention is made of Mahon. See San Diego Herald, April 8 and 15, 1854; "Opinion of the Court of Claims in favor of the claims of Gibbons and Kelly;" F. A. Gibbons to William L. Hodge, Baltimore, Jan. 17, 1853, Correspondence, 12th Lighthouse District, 1853-1858, USCG, RG 26, NA. A microfilm copy of this volume of manuscripts is in the library of the National Park Service's Western Regional Office in San Francisco.

the eight lighthouses except brick and lime. In accordance with their contract, Gibbons and Kelly took out two insurance policies totaling $23,085 on the material. Men hired and aboard, material loaded, and insurance intact, the good ship Oriole departed Baltimore on August 12, 1852 for the Pacific Coast and what was fated to be her last adventure.[24]

Meanwhile, modifications were being made to the lighthouse contract. On May 28, 1852, the government decided to place the Fresnel lens system in the eight lighthouses, and, as had been previously agreed to, the cost of the old system was deducted from the contract price since the government agreed to supply them new. The total deduction for the eight lighthouses was $8,516.92, of which $1,002.74 was for the Point Loma apparatus. Now, the lighthouses were to be considered complete when the coping courses on the towers had been laid and "their summits duly protected from the weather." The following August it was decided to enlarge the intended Cape Disappointment tower to 20 feet in diameter at the base and 12 feet in diameter at the top. The thickness of the tower walls was to be three feet at the base and taper to a thickness of two feet at the summit, and for the additional work involved Gibbons and Kelly were to be paid $7,500. At the time it was realized that it might well be desirable to increase the thickness of the walls of other lighthouses, and it was accordingly stipulated that the government could order the increase and would make additional payments at the rate of $100 for each additional 1,000 bricks.[25] This arrangement was to be taken advantage of by the government.

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24. Claim of Gibbons and Kelly, pp. 26, 52, 57, 59, 61, 62, 70, and 98.

25. Ibid., pp. 16-18 and 87.

On December 22, 1852, at about the time construction on the West Coast began, a significant event occurred--"The general superintendence of the light-house service on the Pacific Coast . . ." was transferred from the Secretary of the Treasury to the Lighthouse Board.[26]

While all these events were transpiring the Oriole was steadily making her way to the West Coast. There was a pause at Panama to disembark "a superintendent with three others who crossed the isthmus . . . for San Francisco. . . ." In San Francisco the isthmus party hired additional workers and began construction of the Alcatraz Island and Fort Point lighthouses.[27] This work began in December and probably consisted only of masonry work, as the Oriole had not yet arrived with the wooden material. One employee later reported that the rainy season prohibited much work being accomplished.

The Oriole arrived in San Francisco on January 29, 1853. The "mechanics" evidently disembarked and joined the others working on the Fort Point and Alcatraz Island lighthouses. There was no place to put the lighthouse materials the Oriole carried, and the Collector of Customs at San Francisco, Beverly C. Sanders, entered into an agreement with the contractors on February 8, 1853, whereby the government chartered the barque to store and transport the materials to the various locations. The charter rate

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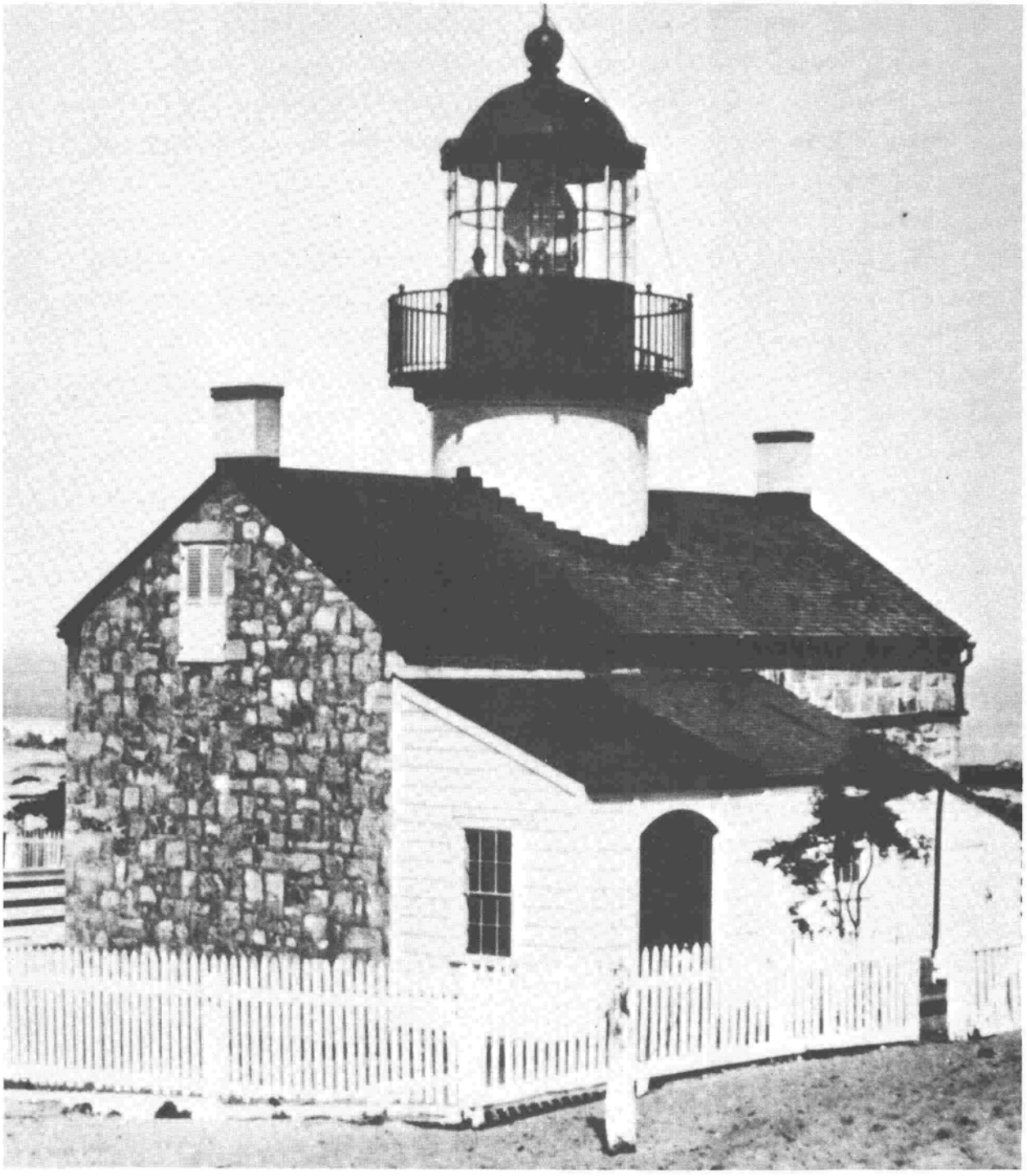
26. Ibid., p. 97.

27. Ibid., pp. 26, 32, 59, and 61. The superintendent was apparently Timanus since Mahon's later testimony indicated he arrived in San Francisco with the Oriole. William H. Hemmick, clerk and disbursing agent, was with the Panama party.



POINT PINOS LIGHTHOUSE, CIRCA 1870's. Photograph from the California Pioneer Society

was $3,000 per month. When notified of the Collector's action, the Secretary of the Treasury propmptly disapproved the charter, saying that it was up to the contractors to get the materials to the proper locations. Due to the distance from Washington to San Francisco, it was evidently some time before the Collector of Customs in San Francisco received word of the disapproval. Meanwhile, there had been a change of personnel in the White House, and concomitantly a change of customs personnel in San Francisco. It had been President Fillmore's attitude that the jobs in the mint or customs houses in California should be filled by deserving Whigs, and it was inconsistent with the time for his successor, a Democrat, to leave jobs filled by Whigs when there were good Democrats to be rewarded. Shortly after the end of March, 1853, Richard P. Hammond was appointed collector in San Francisco.

In reply to the Secretary's disapproval of his predecessor's arrangement, Hammond stated that the charter had been "wise and economical . . . and I shall continue it until further instructions from the department." Again the Secretary disapproved the charter, but the decision was made on September 3, and with the delay in communicating with the West Coast the disapproval was not received by the San Francisco collector until after the departure of the Oriole for Cape Disappointment to erect the lighthouse there. By the time the communication arrived on the West Coast, fate had settled the charter question.

F. Sinking of the Oriole

The Alcatraz and Fort Point Lighthouses were completed in the spring of 1853. The construction crew moved southward to Point Pinos in Monterey and built the lighthouse there. They then journeyed to the Farallone Islands where, after an altercation with the egg pickers there, they erected the lighthouse.

After completing the Farallon light the Oriole returned to San Francisco and around the first of September headed north to begin construction of the Cape Disappointment lighthouse. She had aboard workmen and materials for four lighthouses. Another passenger, and the most important one to the contractors as it later turned out, was a government representative whom the Collector of Customs had sent aboard on July 1, 1853, to "take charge, on behalf of the government, of the goods and materials on board said vessel and said goods were placed in his charge, and he was directed to see that said materials and goods should be used for lighthouse purposes only."

The vessel made her way northward and, arriving off the mouth of the Columbia River, had to wait eight days for a pilot to come and take her in. Finally the pilot came, and on September 19, under a good breeze, she moved smartly through the narrow channel across the bar. Suddenly the wind died, the vessel lost steerageway, and catastrophe beckoned. The current took control of the ship, and the tide carried her inexorably toward doom. One can imagine the utterly helpless feeling which the pilot and the captain must have experienced as the ship drifted toward the shoals. The tumbling, white breakers seemed to suck the helpless vessel closer. Suddenly everyone aboard felt a jolt, and the ship quivered. She had struck a rock in seventeen and a half feet of water, and a gaping hole admitted the sea. A few frantic efforts were made to save the Oriole, but the captain soon realized

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28. Ibid., pp. 21, 57, and 80-81; James Guthrie to R. P. Hammond, Washington, April 16, 1853, Correspondence, 12th L. H. Dist.; Millard Fillmore to Secretary of the Treasury, Washington, July 6, 1852, Letters from Executive Officers, v. I, 1852, USCG, RG 26, NA. Timanus represented the contractors in signing the charter agreement.

the situation was hopeless and gave the order to abandon ship. The ship's two lifeboats were swung out and lowered into the sea, all hands finding a place. Within 15 minutes after she struck, the main deck was settling below the sea. The 32 survivors drifted until the following morning when they were rescued by the pilot boat. Nothing was saved from the vessel, but, fortunately, no lives were lost.[29]

The survivors were taken to Astoria, Oregon, where they were treated with kindness and given food and lodging by the inhabitants, while the pilots obtained clothing for the rescued to wear. In a few days the survivors embarked on the steamer Columbia and returned to San Francisco. The fault of the accident can be attributed solely to the vagaries of nature. Kelly and Oriole's captain had nothing but praise for the pilot, saying all hands were saved through his knowledge.

The materials lost on the Oriole included panel doors, mantels, cupboards, sash boards and casings, shelving, yellow pine for stair steps, risers, sashes, milled and jointed Georgia prime flooring, frames for kitchens, white pine underflooring, rolls of tin roofing, lightning rods, joists, rafters, lumber for outhouses, window frames, cut stone decking for lanterns, granite for steps, hardware, oil butts, paints, and glass. There was enough material, except for stone and bricks, to build four lighthouses. Timanus estimated the value of the material lost at $10,558.[30]

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29. Claim of Gibbons and Kelly, p. 51; Portland, Oregon Commercial, Sept. 26, 1853; Portland, Oregon Weekly Times Sept. 24, 1853.

30. Sam Bridger to James Guthrie, San Francisco, Oct. 1, 1853, Correspondence, 12th L. H. Dist. USCG, RG 26, NA; Claim of Gibbons and Kelly, pp. 26, 62.

G. Construction Continues

To their credit, the contractors did not throw up their hands and give up, nor apparently did they ask for an extension of their contract beyond the previously agreed to completion date of March 1, 1854. They were not to finish by this date, but they tried valiantly and were only three months past due. The government on the other hand did not press them nor hold them to the stipulated completion date.

Arriving in San Francisco, the builders began purchasing more material to construct the Cape Disappointment light, and chartered a vessel to transport men and material once again to Cape Disappointment. On November 21, 1853, two months after the Oriole was lost, the workers began construction of the Cape Disappointment light. This light was to be the largest of the eight, and its cost had already been estimated to be more than twice the anticipated cost of any of the other structures. At first not much progress was made in construction because of the severity of the Oregon winter, and this lighthouse was destined to be the last one finished. The work on the structure was completed July 1, 1854, but it was not inspected until the following September. The contractors were anxious to wind up work on the Pacific Coast; so they paid the passage of the Inspector of the 12th Lighthouse District to Astoria. The Inspector reported that he "found both the keeper's house and the tower well built in accordance with the contract." This was an honest report, and when the structure was examined two years later by another inspector, he reported virtually the same thing. On September 12 the Collector of Customs paid the contractor $30,000 as the agreed to partial payment upon completion of the Cape Disappointment light.[31]

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31. Claim of Gibbons and Kelley, pp. 4, 11, 16, 21, and 124; Campbell Graham to E. L. F. Hardcastle, Astoria, Sept. 17, 1854, Correspondence, 12th L. H. Dist., USCG, RG 26, NA.

Meanwhile work began on the three remaining lighthouses. Around the first of the year work started on the one at Humboldt Harbor. The Inspector authorized an increase of two inches in the thickness of the walls, as was done to all the structures except the one on Alcatraz Island and the one at Fort Point. Toward the end of March the Humboldt lighthouse was completed, and by May had been inspected and accepted by the government.

At about the time the Humboldt lighthouse was begun, Timanus was readying men and material for a trip to the south. On January 12, 1854, he departed San Francisco for Point Conception to begin the lighthouse there. He later testified that he visited all the lighthouses except the one at Humboldt Harbor.[32] The delay caused by the sinking of the Oriole evidently resulted in his having to take a more direct hand in the supervision of the construction. Most likely the work had been divided: Mahon supervised the erection of the Cape Disappointment and Humboldt Harbor lights, while Timanus assumed responsibility for the ones at Point Conception and San Diego. This explanation would account for his having not visited the Humboldt site.

It is apparent that Timanus and his crew worked solely on the Point Conception lighhouse until it was either completed or nearly completed, since he did not begin construction of the Point Loma lighthouse until after April 8, which was within a week of the anticipated completion date of April 15 for Point Conception. In May one of the contractors wrote that the Point Conception lighthouse had been completed, but he could not get it inspected by the Collector at San Diego, who felt such work was out of his

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32. Claim of Gibbons and Kelly, 74, 124; R. P. Hammond to Thornton A. Jenkins, San Francisco, Sept. 14, 1854; Francis A. Gibbons to Thornton A. Jenkins, Baltimore, May 27, 1854, Correspondence, 12th L. H. Dist., USCG, RG 26, NA.

province.[33] The Collector was right; such work was the duty of the District Inspector.

The location of the Point Loma lighthouse was a hassle from shortly before the arrival of the construction crew on the West Coast until nearly the end of 1853. In 1851 the Coast Survey party, in locating a site for the lighthouse at San Diego, had concluded that the logical place was near the end of Point Loma. This was duly reported to the Lighthouse Board and indicated on a map which was displayed in the Treasury Department building at the time negotiations were going on to build the eight lighthouses. The contract Gibbons and Kelly had entered into stated that the lighthouse sites would be those selected by the Coast Survey. This contract, however, in mentioning the places where the light would be located, merely said San Diego and made no mention of Point Loma which was some eight or nine miles from the town of San Diego. Apparently the contractors did not connect San Diego and Point Loma, for on January 17, 1853, Gibbons wrote the Lighthouse Board asking where to place the San Diego lighthouse. On the 25th the Lighthouse Board replied that they were enclosing "for your information a copy of the report of the Superintendent of the Coast Survey who was charged under the law with the duty of selecting all sites for Light Houses on the Pacific Coast, from which it appears, that Point Loma is the locality indicated by that officer." Gibbons was almost as startled at this reply as if he had been slapped in the face with a fresh-caught mackerel. He immediately wrote to the Secretary of the Treasury saying that the Point Loma site was new to him, and he knew nothing about it; again he asked for the location of the San Diego lighthouse. This second inquiry was turned over to the Lighthouse Board who replied that Gibbons

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33. Gibbons to Jenkins, May 27, 1854, Correspondence, 12th L. H. Dist., USCG, RG 26, NA.

and Kelly were "bound by the terms of their contract . . . to erect the Light required on Point Loma near San Diego, the site indicated by the report of the Superintendent of the Coast Survey . . ." since the contract read that the lighthouses were to be erected "at the several points already indicated or to be indicated as the sites thereof by the officers of the Coast Survey." Apprised of his decision, Gibbons wrote to Assistant Secretary of the Treasury W. L. Hodge objecting to Point Loma as the site for the lighthouse, saying that the site was a long way from town and was only accessible by land. The material would have to be landed at La Playa, near Ballast Point, and transported seven or eight miles to the summit of Point Loma more than 400 feet above sea level; a road with long bridges would have to be constructed at great expense. Gibbons added that he and Kelly, however, would be happy to erect the structure on Point Loma for an additional sum. But this suggestion failed to arouse any sympathy on the part of those concerned with lighthouse construction.

Nearly three weeks later Gibbons called in person on the Assistant Secretary. During this interview Hodge told Gibbons that he realized the question of the site of the San Diego light was ambiguous, and he gave Gibbons the choice "either to build at Point Loma or abandon the contract altogether for that Lighthouse." The contractors, he added, could withdraw "without any claim for damages on either side. . . ." There is no indication of Gibbons reply, but he evidently decided not to press his point further at this time, for it was not until the early part of October, nearly six months after his converstation with Hodge, that he again wrote the Department about the desired location of the San Diego lighthouse. He recounted his reasons for objecting to the Point Loma site, and once again offered to erect a lighthouse on Point Loma "for a proper compensation." The Lighthouse Board maintained the view that the only place for the lighthouse was the site selected on Point

Loma, but just what official reply was made to Gibbons is not known. Probably he was once again given the choice of building on Point Loma or backing out of the contract. Whatever was said to them, the contractors went ahead with construction, and the following May Gibbons wrote to the Lighthouse Board that the "Lighthouse on Point Loma that was ordered by the Secretary of the Treasury and the Lighthouse Board, for which we have no contract, will be completed on the 1st [?] of June next at a cost of nearly double our contract price for the light which we contracted to build at San Diego. . . ."[34] As it turned out the Point Loma light was second only to the one at Cape Disappointment in cost.

Meanwhile local people were beginning to wonder "when the contractors are going to commence operations in [San Diego] harbor." As the lights farther north were completed, jealousy began to manifest itself, and in 1853 the editor of the local paper opined: "The appropriation was made by Congrees some three years ago, and as yet, there has not been a blow struck."[35] And it was nearly a year after this remark that a blow was finally struck on a lighthouse for Point Loma.

On April 7, 1854, the schooner Vaquero arrived from San Francisco with "Bricks &c for the Light-house" at Point Loma.

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34. Claim of Gibbons and Kelly, p. 124. Gibbons to Jenkins, Baltimore, Jan. 17, 1853; Jenkins to Gibbons, Washington, Jan. 25, 1853; Gibbons to Thomas Corwin, Baltimore, Jan. 28, 1853; W. B. Shubrick to Thomas Corwin, Washington, Feb. 3, 1853; Gibbons to W. L. Hodge, Baltimore, Feb. 15, 1853; W. L. Hodge, Endorsement to the files, March 7, 1853; Gibbons to James Guthrie, Baltimore, Oct. 3, 1853, all in Letters from Executive Officers, v. 3, 1853; Lighthouse Board Journal, Oct. 9, 1852-Aug. 1, 1854, v. I, p. 115, USCG, RG 26, NA.

35. San Diego Herald, July 9, 1853.

Within a week work was begun. Bricks, cement, lime, and lumber were landed from the Vaquero at Ballast Point and then hauled to the top of Point Loma over a road which took eighteen men thirty-five days to construct. The bricks were used to construct the tower; sandstone for the dwelling was obtained on Point Loma, and apparently was quarried near Ballast Point. Tiles for the basement floor were obtained from the ruins of the old Spanish Fort Guijarros situated at the hill of Ballast Point. Upon the chaparral-covered summit of Point Loma water was not available; consequently, in order to moisten their mortar and plaster, the builders hauled water from a well at La Playa, a distance of about seven miles. During the construction a reporter for the San Diego Herald visited the site and talked to Timanus, who gave him a description of the structure contemplated:

> The walls will be 20 feet high from the foundation, and the entire building 20 feet wide by 30 feet long. There will be a cellar of 6 feet in the clear, the main building will be 9 feet 2 inches in the clear, and the attic 3 1/2 feet. The "tower" will be situated directly in the middle of the building and will be 10 feet in diameter, thus leaving on each side rooms of 14 by 20 feet. A spiral staircase will lead through the tower to its height, which is to be 33 feet from its base, thus there will be an elevation of 433 feet from the level of the sea. A kitchen and other out offices are also to be erected of wood in the rear, and when completed will form a useful ornament.[36]

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36. San Diego Herald, April 8, 15, 1854; Claim of Gibbons and Kelly, pp. 27, 28.

The kitchen referred to was the wooden shed-like appurtenance attached to the rear of the dwelling, and thus the reporter received, except for tower dimensions, a description not only of the Point Loma lighthouse, but also the one on Alcatraz Island, at Point Pinos, at Humboldt Harbor, at Point Conception, and probably the first one built at Fort Point. It also matched several subsequent lights built on the West Coast, such as the ones at Santa Barbara and Crescent City.

Unfortunately, no accounts of the actual activities in the construction of the lighthouse exist, and no reliable record can be found stating precisely when the structure was completed. The contractors later stated that the last four lighthouses were all worked upon at the same time and consequently no detailed accounts were kept. Timanus testified a year later that the building was completed on April 15, which was impossible since work did not begin until after April 8. On May 27, 1854, Gibbons wrote that the Point Loma lighthouse would be completed on the following June 1. However, in view of the fact that the normal time needed by these builders to erect a lighthouse was about three months, it would seem more likely that the building was not completed until around July 1. Unquestionably, the work was completed prior to August 26, 1854, for on that date the collector of customs in San Diego wrote the Lighthouse Board that the Inspector had examined and received the lighthouse on behalf of the government.[37]

The Point Loma lighthouse and the one at Cape Disappointment were completed about the same time, Gibbons having

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37. Claim of Gibbons and Kelly, p. 28; O. S. Witherby to Thornton A. Jenkins, San Diego, Aug. 26, 1854, Lighthouse Board, Engineer and Inspector, 12th Dist., Feb. 1853-June 1856, v. 23, USCG, RG 26, NA.

reported that both were to be finished on June 1, 1854. But which one holds the dubious distinction of having been finished last? Since the exact completion date of neither is known, we can only speculate, and from the point of view of time alone it would seem most probable that the Point Loma lighthouse was the last one completed.

On the same trip the Inspector made to examine the Point Loma lighthouse, he also inspected the one at Point Conception and reported accepting both by the same letter. He then journeyed to Astoria, Oregon, and inspected the Cape Disappointment lighthouse and "found both the keepers house and the tower well built in accordance with the contract."[38] Thus the last of the eight contracted-for lighthouses to be accepted was the one at Cape Disappointment. Maybe that makes it the last one completed.

Initially the Point Loma lighthouse, like all the other lighthouses except Cape Disappointment, was to cost $15,000. It wound up costing nearly $30,000, and was the second most expensive lighthouse of the eight; Cape Disappointment cost the most. The reasons for the difference between the contract price and the actual price were several. The contractors contended that it was the duty of each lighthouse, including the payment of pilotage fees and lighterage fees for hauling the construction materials from the ship to the site. The cost of the Point Loma lighthouse was further burdened by the contractors' claim for the cost of building a road to the site. The general breakdown of the charges for the Point Loma lighthouse is as follows:

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38. Graham to Hardcastle, San Francisco, Aug. 31, 1854; Graham to Hardcastle, Astoria, Sept. 17, 1854, Correspondence, 12th L. H. Dist., USCG, RG 26, NA.

Amount to be paid on completion of contract	$15,000.00
Deducted for illuminating apparatus	1,002.74
	13,997.26
Allowed for extra thickness of walls	1,153.40
For transportation, construction expenses at site, etc.	13,964.60
	$29,115.26

Certain claims were allowed by the Treasury Department, but not all, and Gibbons and Kelly took their claims to court and eventually won.

H. Lighting the Lighthouses

When the decision was reached to install the Fresnel lens system in the Pacific Coast lighthouses, the building contractors were relieved of responsibility for the illuminating apparatuses. For a time the collector in San Francisco felt that the contract required Gibbons and Kelly to furnish "artisans" to put up the illuminating equipment. However, due to the delicacy of the new system and the possibility that the contractors would send poor workmen who might permanently damage the equipment, the collector recommended installing the illuminating apparatuses under a separate contract, using local talent. The Inspector, Halleck, concurred with him.[39] The Lighthouse Board, too, felt that it was incumbent upon the contractors to install the Fresnel system, but they did not press their contention too vigorously, and, consequently, from the beginning the lighting systems in the Pacific Coast lighthouses were added by separate contract.

The Board established on March 3, 1851, to investigate the administration of aids to navigation under the Fifth Auditor

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39. Hammond to Jenkins, San Francisco, Oct. 5, 1853, Correspondence, 12th L. H. Dist., USCG, RG 26, NA.

strongly recommended installing the Fresnel lighting system in all lighthouses. Since the investigating board members were virtually the same ones who composed the Lighthouse Board that was established in 1852, it was only logical that pressure would be exerted by them to get the Fresnel system installed as rapidly as possible. On May 8, 1852, the Chairman of the Lighthouse Board wrote the Secretary of the Treasury, strongly urging that the Board's recommendation be implemented by installing Fresnel lenses in all new lighthouses. The effect of this recommendation was immediate, for on May 21 the contract with Gibbons and Kelly was amended to have the Fresnel system installed in the Pacific Coast lighthouses.

Later, Lt. Washington A. Bartlett, U.S.N., was dispatched by the Secretary of the Treasury to France to contract for the manufacture of illuminating apparatuses for the Pacific Coast lighthouses. Shortly after arriving in Paris he entered into a contract with Sautter & Co. to manufacture two third order illuminating apparatuses: one for the Fort Point lighthouse and one for the Alcatraz Island lighthouse. The one for Alcatraz cost about 24,324 francs.

Bartlett reported the costs of two orders of the Fresnel system as follows:

	1st Order	3rd Order
Lens	$ 6,000	$ 1,600
Lamps (3)	400	250
Frame and extra pieces	750	260
Lantern and extra pieces	4,000	1,760
	$11,150	$ 3,810

Bartlett requested and, at the recommendation of the Lighthouse Board, was granted permission to contract with Sautter & Co. for the other six illuminating apparatuses for Point Loma, Point Conception, the Farallones, and Cape Disappointment; a second order light for Point Pinos; and a third order light for Humboldt Harbor.

In April, 1853, the first two lenses ordered, the ones for Fort Point and Alcatraz, arrived in New York and were immediately transhipped to San Francisco. They were received by the collector in that city around the first of October. The other lanterns and lenses did not arrive until over a year later: Farallones, late 1854;

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40. Report of the Officers Constituting the Lighthouse Board Convened . . . to Inquire into the Condition of the lighthouse Establishment of the United States Under Act of March 3, 1851 (Washington: 1852), p. 3; W. B. Shubrick to Thomas Corwin, Washington, May 8, 1852; Washington A. Bartlett to W. L. Hodge, Paris, France, Dec. 13, 1852; Contract between Washington A. Bartlett, "Schedule of Manufacturers prices of the Fresnel Lens;" Jenkins to Guthrie, Washington , June 23, 1853, all in Letters from Executive Officers, v. 3, 1853, USCG, RG 26, NA. Report on the State of the Finances, 1852-53: Graham to Hardcastle, San Francisco, March 1, 1855; H. W. Halleck to Hardcastle, San Francisco, Oct. 4, 1853; Graham to Hartman Bache, receipt, July 12, 1855; Graham to Hardcastle, San Francisco, Dec. 30, 1854, Jan. 29, 31, and March 6, 1855, Correspondence, 12th L. H. Dist. Lighthouse Board Journal, Oct. 9, 1852-Aug. 11, 1854, v. I, USCG, RG 26, NA. Lepaute, who is mentioned in connection with the Fresnel lens, collaborated with Fresnel in developing the lens. He was living at the time the Pacific Coast lights were being manufactured, and he was included in the contract for the manufacture of these illuminating apparatuses. See Thomas Stevenson, Lighthouse Construction and Illumination (London; 1881), p. 77; and Jenkins to Guthrie, Washington, June 23, 1853, Letters from Executive Officers, v. 3, 1853, USGS, RG 26, NA. The estimate Bartlett had obtained from the manufactures for a first order apparatus for Point Loma was 74,615 francs. See "Appropriation for Point Loma Lighthouse, California," 1853, Letters from Executive Officers, 1853, v. 3, USGS, RG 26, NA.

Point Pinos, Dec. 30, 1854; Humboldt Harbor, Jan. 31, 1855; Point Loma, Feb. 25, 1855; and Point Conception, March 6, 1855.[40] The Cape Disappointment lens probably arrived in early 1855.

I. Lighting the Lighthouses Continues

After the construction of the lighthouses the lighting of them moved at a snail's pace. The delay can be blamed to a great extent upon the problem of getting the Fresnel lenses to the West Coast. A complicating, and important, factor was the ineptitude of the Lighthouse Inspectors assigned to the Pacific Coast. The first inspector had been Capt. Henry W. Halleck, U.S. Army, who had far greater interests in other things. The second one was Capt. Campbell Graham who tried hard but lacked lighthouse experience. The third one was Maj. Hartman Bache who had competence, energy, and knowledge; he had been transferred from a lighthouse district on the east coast. To him should go a great share of the credit for getting the West Coast lighted.

Shortly after he arrived on the West Coast on June 30, 1855, Bache began to take action. He sent one C. S. Merrill to Point Conception to inspect the tower and see if it could support a first order apparatus. Bache himself journeyed over to the Farallones to look at that tower for the same purpose. It was evident that neither tower was satisfactory and both would have to be rebuilt.

About the same time it was decided to make the Point Loma lighthouse a third order rather than a first order light, since the tower was only large enough to support a third order apparatus and that size was all that was necessary for the purpose the light was to serve. Toward the end of July Samuel Franklin, who had installed the off-center Point Bonita apparatus, was dispatched southward with the third order lantern and lens originally intended

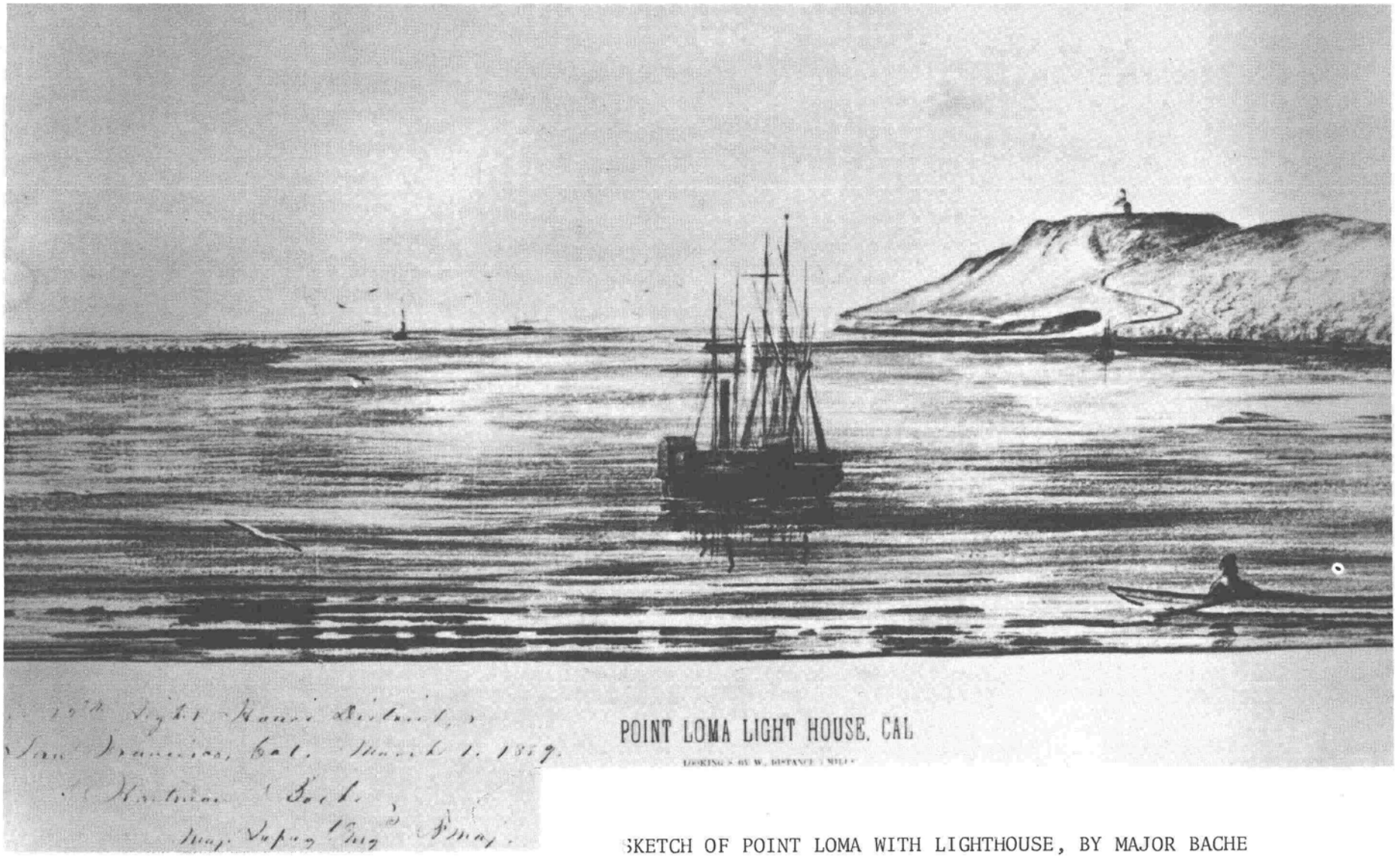
for Humboldt Harbor. He was instructed to make what changes were necessary in the Point Loma tower so it would receive the lantern. With him went Joseph Smith, who apparently was a mason.

On August 11 the San Diego Herald announced:

> The Schr. Gen. Pierce, Capt. Badger, which arrived on Friday morning last Aug. 3, brought down the Lantern and other fixtures for the Lighthouse on Point Loma, which will be put up immediately, under the superintendence of Messrs. Smith and Franklin, who came as passengers on the schooner for that purpose. Although the work will be commenced at once, we understand that it will require some two or three months for its completion, on account of the alterations and repairs necessary to be made on the house. We may expect to see the light in operation about the first of November.

Major Bache visited Point Loma on September 5 and reported:

> The coping course of stone had been removed, and, after raising the tower two bricks in height, to give the domical arch sufficient thickness, were replaced, and cramped with iron. The holes for the uprights of the lantern, and the channels for the brackets of the gallery, had been cut to receive them. The sleeping drum and iron manhole, to replace the one of wood, deficient in size, were also set in the domical arch--the top of which was leveled off and well coated with cement. The lantern and lighting apparatus, which had reached the lighthouse, with slight exceptions, in perfect order, were in course of cleaning, preparatory to putting up. The dwelling is of stone, and, with the exception of the



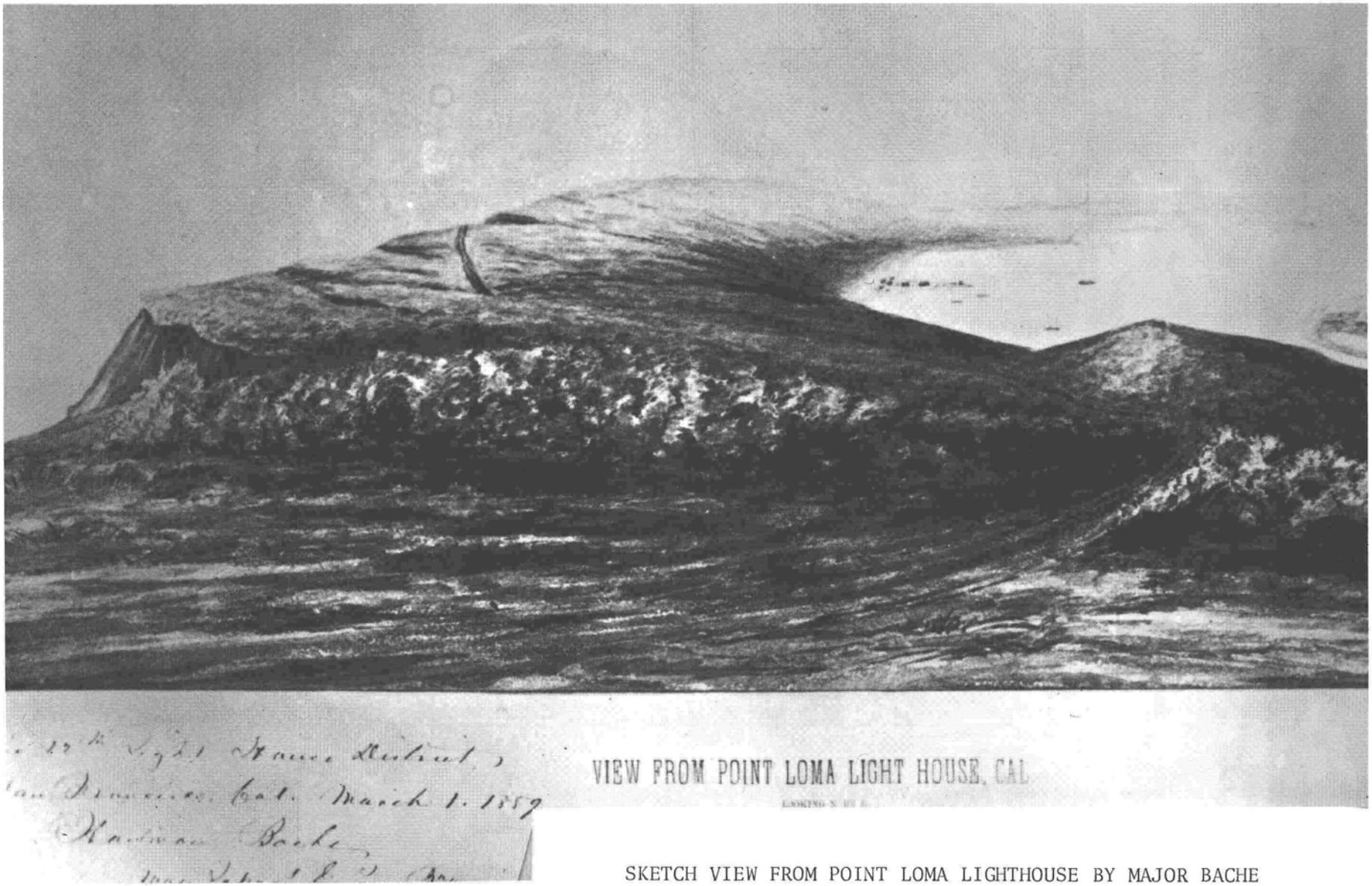
SKETCH OF POINT LOMA WITH LIGHTHOUSE, BY MAJOR BACHE

> mortar, which is very bad, is quite a creditable piece of work. The tower is of brick. The mortar is not only bad, but the brick itself of such poor quality, that in places they have wasted away to a depth of a quarter of an inch to two inches. The pointing, both in the dwelling and that part of the tower exposed to the weather is entirely gone. Directed the deficient bricks in the tower cut out and replaced by good ones, and then so much of it as rises above the roof of the dwelling, as well as the brick eaves of the latter, plastered or rough-cast with cement; also the stone work of the dwelling pointed anew.

In addition he ordered the cistern, which had been reported as not holding water, to be "raised by laying a pavement of brick in cement, and then coating the entire interior with the same material." The cistern would hold only 1,240 gallons, a quantity wholly inadequate to supply the keepers for a year. As a temporary expedient he suggested using casks to hold extra water, "leaving the question of an additional cistern for future consideration." He also ordered the tin roof of the dwelling painted red.

Bricks to repair the tower were purchased locally from Thomas Whaley's brickyard at La Playa. Harvey Ladd, who had come to San Diego with the Mormon Battalion, was hired as mason. Work progressed well and around the first of October Franklin left for Point Conception to install the lantern there. Joseph Smith was left at Point Loma to wind up the work and instruct the keepers in the operation of the illuminating apparatus.

On seeing the work accomplished the San Diego Herald said, "Those employed in putting up the light deserve credit for



SKETCH VIEW FROM POINT LOMA LIGHTHOUSE BY MAJOR BACHE

the manner in which the work has been accomplished and the short time occupied in doing it." Major Bache ordered the keeper, James Keating, to display the light on November 15, which was ten days short of a year since the Herald had complained about the slowness of getting a light "for the little stack of brick on Point Loma."

If there was any doubt in anyone's mind about the adequacy of a third order Fresnel light as a coast light, it was erased within a few months. Two weeks after the Point Loma light was first exhibited a ship captain reported to Major Bache that he had seen the light at more than 25 miles. Three months later the skipper of the Golden Gate said he saw the light at 39 miles.

While the lantern was being placed on the tower at Point Loma Major Bache recommended building a road from La Playa to the lighthouse. Such a road would better facilitate the hauling of supplies, and at times water, from La Playa to the site. The necessity of the road was apparent and in fiscal year 1857 $1,500 was spent to construct it.[41] The road used by the builders had run from Ballast Point in a zig-zag fashion up to the crest of Point Loma at a place almost even with Ballast Point. The La Playa road ran along the crest of Point Loma for about two miles and then began a straight, gradual descent to La Playa.

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41. Bache to Hardcastle, San Francisco, July 30, 1855; Bache to Jenkins, San Francisco, Oct. 18, 1855, Correspondence, 12th L. H. Dist. Bache to Jenkins, San Francisco, Nov. 27, 1855, Feb. 17, 1856, L. H. B., Engineer and Inspector, 12th Dist., 1853-1856, USCG, RG 26, NA; San Diego Herald, Aug. 11, Oct. 13, 1855; Receipts and Expenditures, 1856-1857, House Ex. Doc. No. 13, 35th Congress, 1st Session; Report on the State of the Finances 1855, pp. 276, 409; Harvey Ladd, statement, Oct. 11, 1855, Whaley Papers, Whaley House, San Diego.

J. Manning the Lighthouse

There were problems getting the lighthouses built, and there were problems securing personnel to tend these important aids to navigation. Locating keepers was not an easy task, and holding onto them once they were hired was even more difficult. The villain in the case was "low pay."

Keepers were nominated (and virtually appointed) by the Collectors of Customs who had also been designated Superintendents of Lights. Once or twice, however, Bache appointed keepers. The superintendents submitted the names to the Secretary of the Treasury who officially appointed them. The salaries of the keepers came through the Superintendents of Lights.

In the beginning a first order light rated a principal keeper and two assistants, while second and third order lights called for a principal keeper and one assistant keeper. Only a principal keeper was allowed for fourth and fifth order lights.

Principal keepers, regardless of order of light, received $1,000 annual salary. First assistant keepers received $650, and second assistant keepers, $500. Everyone, from the keepers up to the Lighthouse Board itself, considered the salaries inadequate, but Congress would do nothing about raising them.

Keepers were usually appointed about the time the individual lighthouses were completed. Perhaps at the time it was thought that once the structures were completed the illuminating apparatus would be installed immediately. Whatever the immediate reason, the problem stemmed from the confusion caused by the change in administration of aids to navigation.

The Point Loma lighthouse furnishes a good example of the result of the imperfect understanding of the size of Fresnel illuminating apparatuses as it affected personnel. It was first contemplated that the Point Loma lighthouse would have a light of the first order; consequently, about six months after the structure was completed a principal keeper and two assistants were hired. But when the light was changed to one of the third order there was a concommitant reduction in personnel allowance, which, on the surface at least, meant someone had to go. However, both assistants were retained until January 1, 1856 when the second assistant tendered his resignation which was accepted on the 17th. He gave no reason for leaving, but undoubtedly he was disturbed by the two factors which upset most of the keepers: low pay and effective date of employment. With his departure the position of second assistant was discontinued.

The first assistant keeper, George Tolman, had been most upset over the effective date of employment. Tolman had been in the army and served in the Yuma-San Diego area. Upon discharge he settled in San Diego and on January 29, 1855, was appointed first assistant keeper at the Point Loma lighthouse. In the latter part of November he found out that his salary was to begin on the day the lighthouse was put into operation--on November 15, 1855--and was not retroactive to his date of appointment. He was indignant at this intelligence and immediately wrote to Hardcastle, Secretary of the Lighthouse Board, expressing his unhappiness. He identified himself as having served a few years before in the same regiment with Hardcastle in the New River area east of San Diego. Tolman said he had understood at the time that his pay was to begin on the date of appointment. Since he had one job he could not take another and on the basis of his understanding about salary he had in the meantime run up a sizeable board bill.[42]

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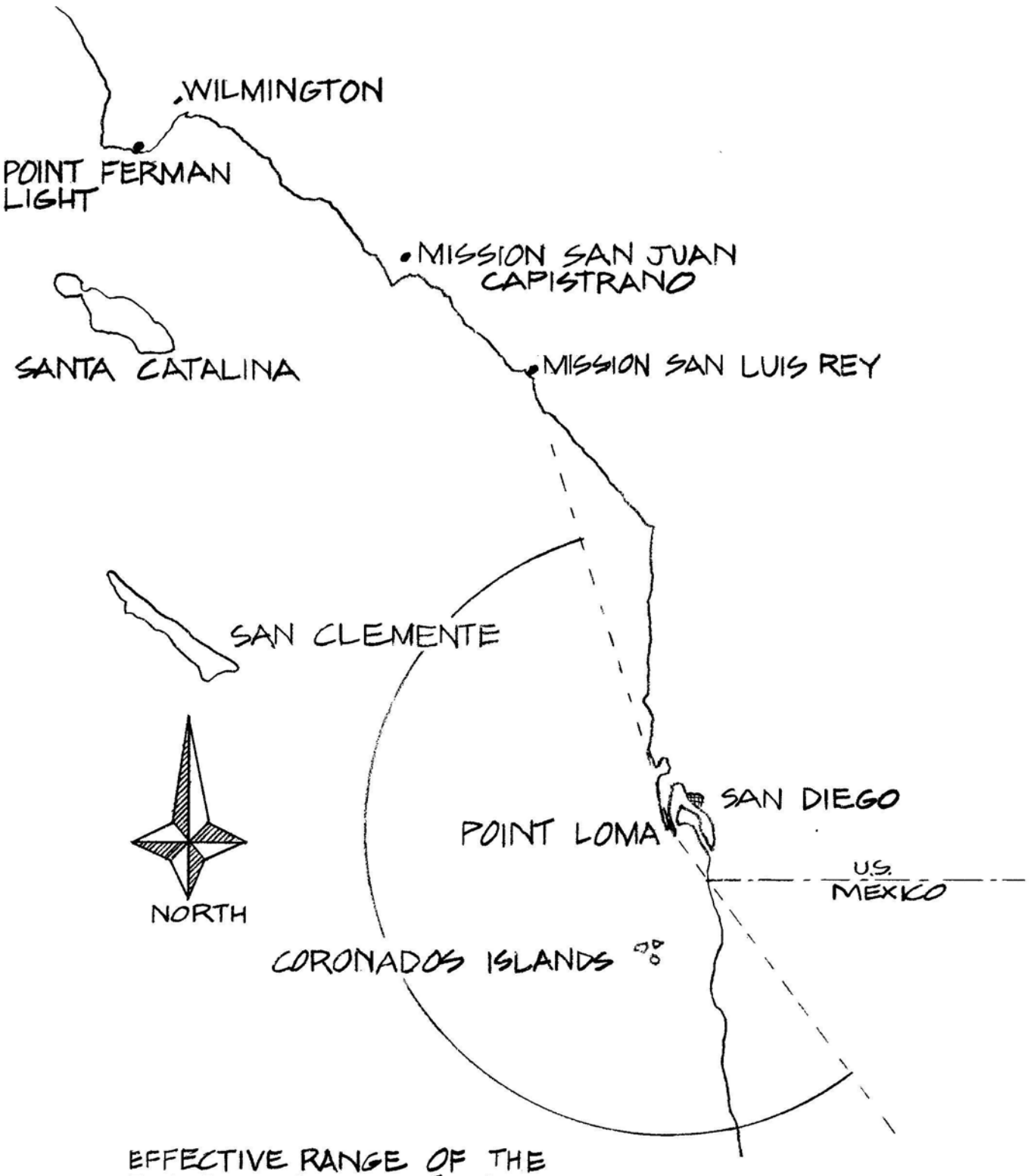
42. Anthony Genan to O. S. Witherby, Point Loma, Jan. 1, 1856; George B. Tolman to Hardcastle, San Diego, Nov. 29, 1855.



EFFECTIVE RANGE OF THE POINT LOMA LIGHT 1890

Unfortunately, the action taken by the Board is not known, but it is unlikely Tolman received back pay. At any rate he resigned his light keeper job on Janaury 29, the first anniversary of his appointment.

Getting principal keepers for the lighthouses was to some extent a problem, but the main difficulty was in filling the lower paying assistant keeper positions. The ones attracted to the jobs came for the most part from a rather unstable segment of society. Four months after the lighting of the Point Loma lighthouse the keeper, James Keating, complained: "'I have been unfortunate in respect of assistants. There comes a strange one every month.'" Previously the keeper at Point Bonita had said, "My first assistant who would only take the appointment by my agreeing to make our salaries equal, even then would remain only four months." Major Bache stated that during his first nine months on the Pacific Coast there had been two keepers and five assistants at Point Bonita (had he made his report two months later he could have raised the numbers to three and six); and three keepers and two assistants at Alcatraz. Several of the assistant keepers at Point Bonita were fired, at least one for drunkeness and neglect of duty. One of the assistant keepers at Alcatraz was removed for unfitness.43

At the Point Loma lighthouse the principal keepers tended to remain longer than the assistant keepers. During the 36 years

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43. Bache to Jenkins, San Francisco, Jan. 19, March 26, 1856; Edward A. Colson to Jenkins, San Francisco, Oct. 1, 1855; Graham to Hardcastle, San Francisco, June 14, 1855; appointments dated Nov. 23, 28, 1855, Jan. 11, 14, 25, Feb. 4, April 1, 3, 5, 7, May 28, 1856; Correspondence, 12th L. H. Dist. "Record of Lights, Keeper's Names, Birth-places, Whence Appointed, Annual Salary, &c, 1853-1870," v. Ia, USCG, RG 26, NA. Report on the State of the Finances, 1855, p. 270, and 1856, p. 604.

the lighthouse was in operation there were 11 keepers and 22 assistants. The last keeper was on duty for 19 years, and transferred to the new lighthouse when it began operating. Undoubtedly the differences in pay explains greatly the differences in tenure.

The light keeper was usually nominated for a position by the local collector of customs. The Lighthouse Board either endorsed or did not endorse the nominee. Official appointment was made by the Secretary of the Treasury. By the 1890s the procedure was for the light keeper to remain on duty for three months after which period he was given an examination by the District Inspector. If the inspector was satisfied, he certified the fact to the Lighthouse Board. The Secretary of the Treasury then gave the keeper a full appointment.

Jobs in lighthouses quickly became subject of the spoils system prevalent at the time. One writer in 1874 said,

> It is hoped that civil service reform will make its way also into this department of the government service, for the petty though important place of light-keeper has too often been made a political prize, and thus the service, which requires permanence, has been injured. The politicians of the baser sort have not seldom defeated the best intentions and desires of the Lighthouse board, and ousted a good man to put in one "useful at the polls."[44]

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44. Edward P. Adams, "Lighthouses and Their Keepers," Scientific American, n.s., v. 69 (Dec. 16, 1883):387; Charles Nordoff, "The Lighthouses of the United States," Harper's Magazine, v. 48 (March 1874):477.

Evidence presently available does not permit the researcher to speculate intelligently on the effect politics had upon personnel serving in Pacific Coast lighthouses. It would seem that when the lighthouses were first lighted on the West Coast that keepers were so hard to come by because of low pay that anyone would be accepted, regardless of his political affiliations. But as time went on and the cost of living on the West Coast was deflated, the lighthouse jobs became more desirable and undoubtedly politics began to enter the picture. At no time, however, was politics, even in the early days entirely absent from the Pacific Coast lighthouse service. The correspondence of the first keeper of the Point Conception lighthouse indicated that he secured the job through political efforts. When he attempted to get back pay for himself and his assistants, he enlisted the support of his congressman before he had exhausted normal channels available in the lighthouse service. One wonders also if possibly politics was not a factor in explaining the short tenures of service by keepers. At the less isolated and more desired Point Loma lighthouse, for example, there were eleven keepers in the eighteen-year period 1855-1873.[45]

A perusal of the lists of keepers names indicates that toward the end of the century the lighthouse service on the West Coast was beginning to take some form as a government career. More names begin to appear as being transferred to another lighthouse in the column which says "Why Vacated." An example is David Splaine. He served in several lighthouses on the Pacific

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45. George Parkinson to Bache, Point Conception, Feb. 24, 1856, Correspondence, 12th L. H. Dist., USCG, RG 26, NA; J. M. Scanland, "Watchers of the Fog," Overland, n.s., v. 41 (February 1903):94.

Coast, including the one at Point Loma, as assistant keeper; and with the establishment of the lighthouse at Ballast Point he was appointed first keeper of that light station.[46]

The work of a lighthouse keeper was not too difficult, and some keepers had outside activities. The first keeper of the Point Loma lighthouse, for example, operated a shipyard--San Diego's first--and in 1857 launched the first vessel built in the city. That the keepers would have time for other activities was recognized, at least negatively, by the Lighthouse Board when it provided that the keepers could not carry on any business which kept them away from the lighthouse for a prolonged period of time.

Instructions provided that regular four-hour watches were to be maintained, and so as not to have the less desired watches fall entirely upon one man, the watches were to be alternated daily. In practice, however, it would appear that this rule, at least at Point Loma, was not adhered to, since reportedly the keepers stood twenty-four hour watches, changing at midnight.

Work itself was not difficult physically, and no great amount of imagination was required to operate successfully a lighthouse, provided one could read. In justifying higher pay for keepers to attract a better educated group (that is, those who could read), the Lighthouse Board remarked that there were ample instructions to guide the keepers if they could but understand them. Just before the lighting of the Point Loma lighthouse the District Inspector gave the principal keeper as guides copies of Lighthouse Establishment Instructions, and Instructions and Directions for the Management of Lens, Lights and Beacons, as well

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46. See Appendix.

as a copy of the current Light List. In addition to these, other publications available to the keeper included List of Illuminating Apparatuses, Fixtures, Implements, Tools, Miscellaneous Articles, and Supplies in General Use in the U.S. Lighthouses, Lighted-Beacons, and Light-Vessels . . .; Instructions and Directions to Guide Light-House Keepers and Others Belonging to the Lighthouse Establishment; and Management of Lens Apparatus and Lamps. In his administrative endeavors connected with the lighthouse the keeper also had assistance available in List of Blank Forms, Circulars, Pamphlets, Placards, and Books.

The principal task of the keepers, of course, was to see that the light was exhibited at sunset and kept burning brightly until sunrise. To perform effectively the main job it was necessary for the lighting equipment to be in good shape, and the keepers were instructed to have "everything put in order for lighting in the evening by 10 o'clock a.m., daily." In carrying out this admonition work at light stations with two or more keepers was divided into two "departments." The person performing the work of the first "department" had to clean and polish the lens; clean and fill the lamp; "remove all dust with the brushes from the frame-work of the apparatus, fit wicks if required, and if not required trim carefully those already fitted to the burner, and see that everything connected with the apparatus and lamp is perfectly clean, and the light ready for lighting at the proper time in the evening." The keeper in carrying out the work of the second "department" had to "clean the plate glass of the lantern inside and outside; clean all the copper and brass work of the apparatus, the utensils used in the lantern and watchroom; the walls, floors, and balconies of the lantern . . . the tower stairways, landing, doors, windows, window-recesses, and passages from the lantern to the oil cellars." In performing their work in the lantern the keepers were instructed to wear linen aprons to prevent the possibility of their coarse clothes scratching the lens.

The various printed instructions, of course, spelled out the routine of a keeper's job, such as washing the lens every two months with spirits of wine and polishing it annually with rouge and alternating the lamps inside the lens every 15 days. Any questions about his work could be answered by carefully perusing the instructions available. If a keeper dropped oil on the lens, instructions told him to use spirits of wine in cleaning it off. If he did not know how to trim a wick or adjust a lamp, a step by step detailed description was available, including a picture of what the lamp flame should look like.[47] Little was left to the discretion, or the imagination for that matter, of the keeper, and a neat workable lighthouse could be kept with only a modicum of intelligence and imagination from the keepers. Intellectually all they needed was the ability to read and to comprehend what they read. Physically they needed to bring to the job a certain amount of energy.

Once the routine work connected with the light was accomplished, the keepers could turn their attention to maintenance, which for the most part consisted of repairs of a minor nature to the equipment and structures. Major repairs were normally taken care of through contract, and were usually provided for by special appropriations from Congress as specifically requested by the Lighthouse Board.

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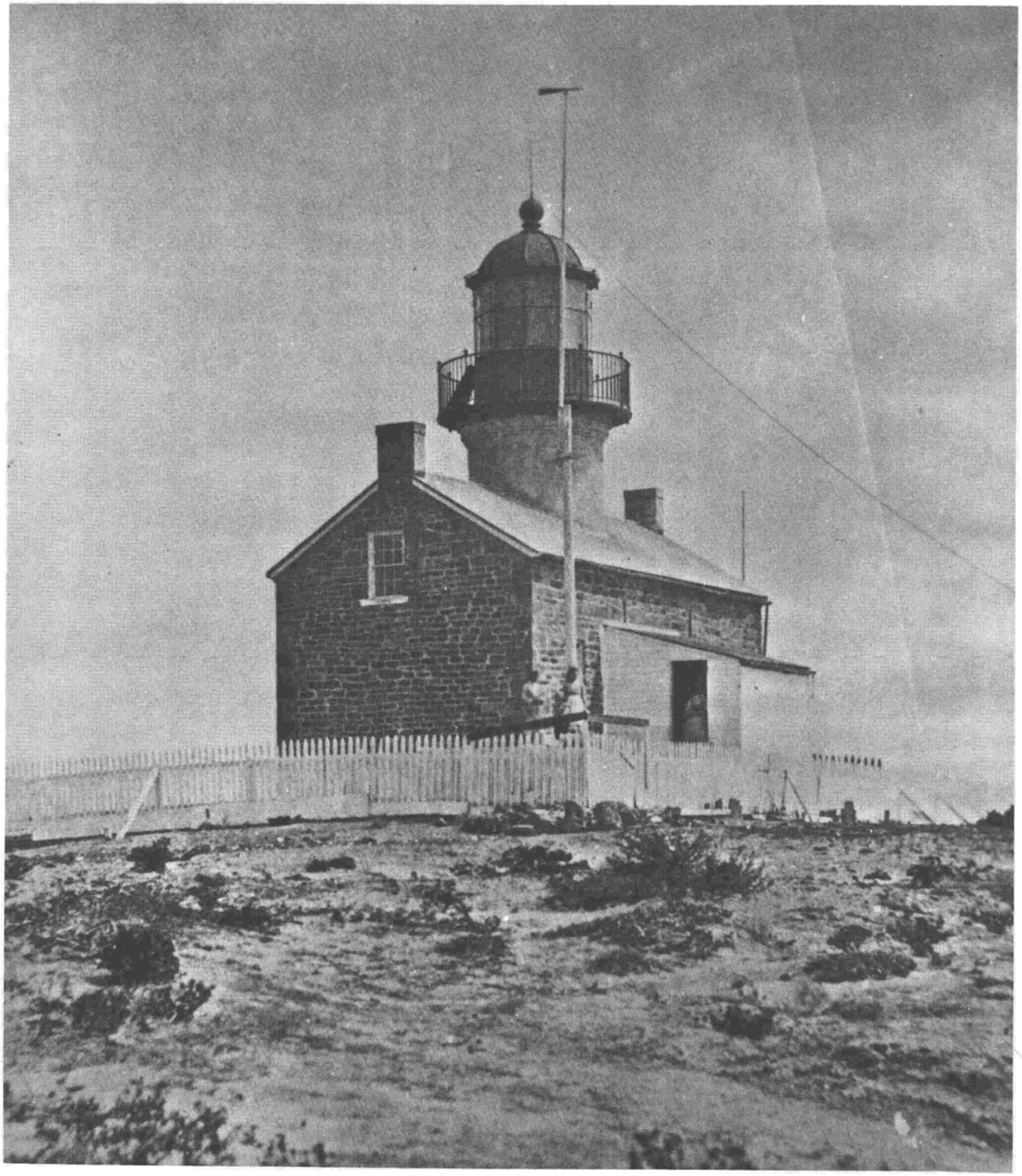
47. James Mills, "Southern California's First Light," San Diego Historical Society Quarterly, v. 1, no. 4 (Oct. 1955):46; Lighthouse Board, Instructions and Directions to Guide Lighthouse Keepers and Others Belonging to the Lighthouse Establishment (Washington: 1870), 7, 10, 13-14, 19-29, 61; San Diego Union, July 14, 1929; Report on the State of the Finances, 1855, p. 270; Lighthouse Board, Instructions and Directions to Light Keepers (Washington: 1871), p. 131; Lighthouse Board, Management of Lens Apparatus and Lamps (n.d.), p. 7; Gustav Kobbe, "Life in a Lighthouse," Century Magazine, v. 47 (January 1894): 371-372; Bache to Jenkins, San Francisco, Oct. 27, 1855, L.H.B. Engineer and Inspector, 12th Dist., Feb. 1853-June 1856, v. 23, USCG, RG 26, NA.



ACTIVE POINT LOMA LIGHTHOUSE, CIRCA 1860's. NOTE UNPAINTED CONDITION AND CONSTRUCTION AND COLOR OF THE LEAN-TO. From historical collection, Title Insurance and Trust Company, San Diego, California.

In addition to maintenance of Government property, the keepers also concerned themselves with personal endeavor peculiar to their job location. For many years the lighthouse at Point Loma possessed only one cistern--the one in the basement--and it was too small to hold a year's supply of water which was obtained by run-off of rainwater from the roof; consequently, when the keepers ran out of water they had to haul it in barrels by wagon from a well at La Playa or from one near what is now the junction of Midway and Rosecrans Streets. The seven to ten-mile journey was over roads liberally dotted with chuck-holes; the steep ascent to the top of Point Loma added to their problems. The number of trips a year depended upon the annual rainfall. Even with the addition in 1883 of a huge concrete catch basin in front of the lighthouse and a cistern at each end to hold water, water problems were not ended. Annual rainfall was simply not always adequate to meet needs.

The keepers sometimes, where feasible, kept gardens. At Point Loma a potato patch, for a while at least, was maintained. At first located just north of the lighthouse and then moved to a one and a half-acre site near the present Bennington monument in Fort Rosecrans National Cemetery the patch contained only potatoes; lack of water prevented growing anything else. The last keeper's wife, Mrs. Israel, by careful nursing and protecting kept near the lighthouse a tomato vine growing and bearing year after year.[48]

In the years after the Civil War the District Inspector recommended a sail boat be assigned to the Point Loma keepers, and in 1868 he reported he ordered one. By 1872, however, it had not arrived and the keeper requisitioned either a sailboat or a horse

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48. San Diego Union, July 14, 1929.

and wagon. Still nothing was done and by 1875 the District Inspector recommended that the keeper be supplied with horses and a wagon. The Board quickly authorized the Inspector to obtain "a pair of California horses, and a wagon" with the stipulation that the keeper would be required "to haul all supplies, fuel, and necessaries to the station." Five years later the Board authorized selling the horses and wagon at public auction and the purchasing of a sail boat "for transportation of supplies" to the Point Loma station.[49]

Normally supplies, such as oil, wicks, mops, brooms, and equipment, were brought to lighthouses quarterly. The procedure described as occuring in the 1890s at a New England lighthouse was probably duplicated numerous times over the years on the Pacific Coast. On arriving at a light station the supply vessel anchored, and a party landed and made its way to the lighthouse. After a brief social period and exchange of pleasantries the keeper produced his worn out brushes, mops and brooms, broken tools, and decrepit lamps, and they were exchanged for new ones. The old items were taken back to the vessel and when the ship was far out at sea they were dumped overboard; the captain of the supply vessel did not want them to be washed ashore to be again offered in evidence.

Probably in the 1880s, certainly prior to 1890, the Lighthouse Board began supplying portable libraries to the keepers.

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49. R.S. Williamson to A.B. Shubrick, Sept. 22, 1868, L.H. Bd., Engineer 12th & 13th Dist., July 1868-May 1869; Charles J. McDougal to Joseph Henry, April 16, 1872, L.H. Bd., 12th-13th Dist. Inspector & Engineer, July 1871-May 1872; J.E. Walker to A.T. Snell, April 27, 1875, L.H. Bd., Letters to Inspector 12th Dist., July 17, 1874 to June 28, 1878; and F.U. Farguhar to C.J. McDougal, Aug. 5, 9, 1880, L.H. Bd., Letters to 12th Dist. Inspector, July 9, 1878 to June 29, 1882, all in USCG, R.G. 26, NA.

The books were arranged in cases which "make rather a neat appearance when set upright on a table, and they only need be closed and locked to be ready for transportation." Each contained about 50 volumes "of a proper admixture of historical, scientific, poetical, and good novels, together with a Bible and a prayer-book." The libraries were usually exchanged at the quarterly inspection.

Another innovation of the 1880s was the introduction of a uniform for the light keepers. In 1883 dress and fatigue uniforms were prescribed and the following year the Lighthouse Board put the uniform into effect, giving the first one free to each keeper. On May 1, 1888, regulations regarding the uniform were issued. The uniform was described as follows:

> The uniform for male keepers and assistant keepers of light stations, and the masters, mates, engineers, and assistant engineers of light vessels and tenders, will consist of coat, vest, trousers, and a cap or helmet. The coat will be a double-breasted sack, with five large regulation buttons on each side--the top buttons placed close to the collar, the lower ones about 6 inches from the bottom, and the others at equal spaces between the top and lower buttons. It will be of the length of the extended arm and hand, and will be provided with two inside breast pockets and two outside hip pockets, the latter to have flaps so arranged as to be worn inside the pocket if desired. Each sleeve will have two small buttons on the cuff-seam.
>
> The vest will be single-breasted without a collar, and cut so as to show about 6 inches of the shirt. It will have three pockets and five small regulation buttons.

The trousers will be cut in the prevailing style.

All of the above will be made of suitable dark indigo-blue jersey or flannel.

The cap will be made of dark-blue cloth, with a cloth-covered visor and an adjustable chin-strap of cloth held by yellow-metal regulation buttons. A yellow-metal lighthouse badge will be worn in the middle of the front of the cap. Masters of tenders will wear a gold-lace chin-strap instead of one of cloth.

During the summer months in northern latitudes and during the entire year in southern latitudes, there may be worn canvas helmets of authorized shape and color, with the prescribed buttons and the yellow-metal light-house badge in the middle of the front.[50]

K. Point Loma as an Active Lighthouse

During its active period the pattern of existence of the Point Loma lighthouse was not very much unlike that of the other light stations on the West Coast; that is, over the years the dwelling and tower were found to be inadequate for the necessities of an active station, and barns, sheds, and other buildings were added from time to time.

The difficulty of access to the lighthouse from San Diego, the supply landing at La Playa, and other places was recognized

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50. Kirk Munroe, "From Light to Light," Scribner's Magazine, v. 20 (Jan. 1896):467; Johnson, The Modern Lighthouse Service, p. 104.

KEEPER AT NEW POINT LOMA LIGHTHOUSE IN 1893, NOTE THE UNIFORM. From historical collection Title Insurance and Trust Company, San Diego, California.

immediately; and in response to a recommendation from the Lighthouse Board, Congress on March 3, 1855, appropriated $1,500 to build a road from La Playa to the lighthouse; and the road was built in the 1857 fiscal year.

Water at Point Loma was a problem as was to be expected in an area of little rainfall. The lighthouse had been in operation less than six months when the keeper was instructed to convert the "old oil Butt," when it gave out, into a container for water as an extra supply for the dry season. But this was hardly a permanent solution to the problem. In 1882 authorization was given to construct a large catch basin, or water shed, in front of the lighthouse and to excavate for a cistern. The work was completed in January 1883, and it consisted of a 2,900 square-foot mortar catch basin and an 11,000 gallon brick cistern fitted with a Douglas hand pump and suction pipe. At some subsequent time another cistern was excavated. There now was a cistern at each end of the catch basin.

The cisterns were adequate during years of normal to heavy rainfall, but for those years when rainfall was light the water problem again arose. When water was short the light keepers loaded two 50-gallon barrels onto their wagon and journeyed nearly ten miles to "a well in a canyon back of Roseville." The filled barrels were then carted back to the lighthouse over a dirt road generously littered with chuckholes.[51]

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51. Report on the State of the Finances, 1856, p. 614; Receipts and Expenditures, 1856-1857, House Ex. Doc. No. 13, 35th Cong. 1st Sess., p. 208; Report on the State of the Finances, 1883, p. 83; San Diego Union, July 14, 1929; Bache to Jenkins, San Francisco, March 7, 1856, L.H.B., Engineer and Inspector, 12th Dist., Feb. 1853-June 1856, v. 23. USCG, RG 26, NA. The other cistern referred to may have been excavated as early as 1858. A newspaper story in that year said in part, "A gentleman, named Russell, arrived on the last steamer, having a contract to build a new water tank, and make other repairs and alterations at the lighthouse on Point Loma." See San Diego Union, Nov. 27, 1858.

At first, living space was not an especial problem; at least there are no indications of complaints during the early years of the lighthouse. But as time went on the four-room dwelling became just too small. By the 1870s quarters had become obviously inadequate and in 1875 two rooms were fitted up in a portion of the wood and oil storehouse as a dwelling for the assistant keeper. This shed was built of rough unseasoned lumber and was lined inside with cloth and paper. Cracks in the walls made it rather uncomfortable living quarters, despite the highly-touted balmy climate of Southern California. Later the inside walls were lined with tongued and grooved boards, but in 1877 it was still described as "unfit for quarters." Additional repairs must have been made in 1880 for the structure was still being used as a dwelling for the assistant keeper. How long this building served in that capacity is not known, but in 1886 the keeper fitted up a room in the wash house "for the accommodation of the assistant keeper's family. . . ."

Other buildings were added over the years. In 1875 a barn was constructed near the lighthouse and in 1881 a boat house was built at Ballast Point to house the lighthouse boat which had been acquired in 1868. At the same time "a winch for hauling up the boat was placed at the head of the ways. . . ."[52]

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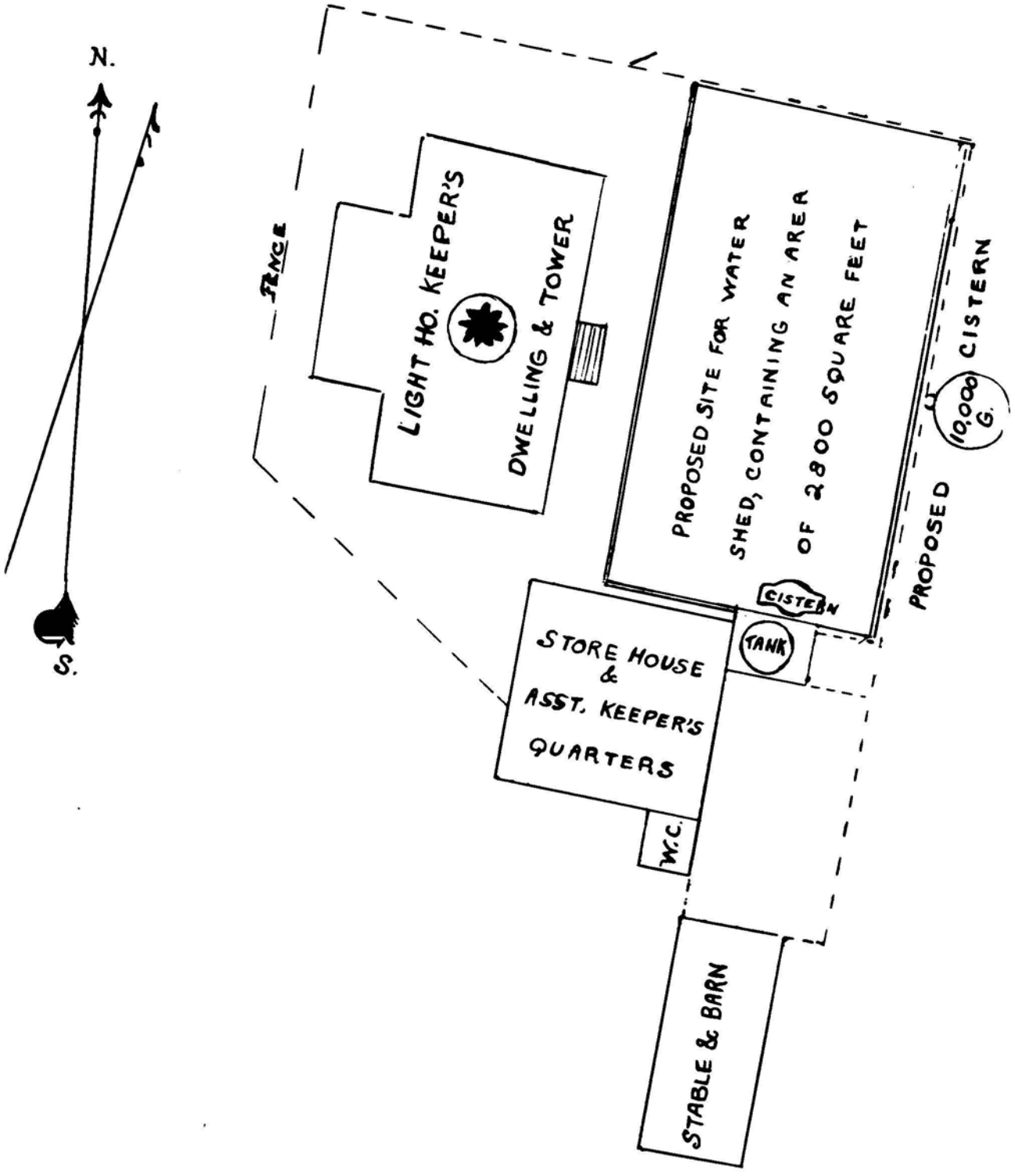
52. Point Loma Notes, files, Cabrillo National Monument. The lighthouse itself was a sturdy structure. During its active period it was exposed to at least two violent assaults by nature. In October, 1858, San Diego experienced such a severe southeast storm that not only did several ships in the harbor drag their anchor and run aground but toppled the home of the local newspaper editor. The storm lasted from 11:00 am until 5:00 pm and "so fearful was the gale at Point Loma the Lighthouse keeper, Capt. Keating, was obliged to leave at 12 o'clock M., fearing the tower would fall." Fortunately, the lighthouse suffered no damage. Damage was done, however, in 1862 when an earthquake shook San Diego. The extent of the damage was not recorded, but apparently it wasn't serious since a clerk for the Lighthouse Board felt he had enough authority to order repairs.



Layout of Point Loma Station in 1882.

Point Loma Light Station about 1890. Sketched from several photographs by Mrs. Gladys Neuber.

The lighthouse structure for nearly all of its active life was not painted the usual white. For many years it was left unpainted, but by 1879 it was realized that the action of the weather was causing the soft sandstone to disintegrate. Repairs were necessary and preventive action was called for; so, the west side and south end walls were covered "with a heavy coat of Portland cement-mortar, after which they were painted with two coats of stone-color, rubber paint."

Over the years the Light List had the Point Loma lighthouse described variously as grey and yellow sandstone, and having a red lantern. The Light List for 1888 had the description altered for the first time. It said, "Low white tower, rising from white dwelling, lantern black." The lighthouse, then, was not painted the "traditional" white until 1887.

During its active years the lighthouse was often visited by local residents. Sometimes they came to watch the shore whalers from Ballast Point harpoon the migrating gray whales just beyond the kelp beds off Point Loma. At other times groups of young people would pack picnic lunches and journey to the lighthouse for a pleasant outing. There was one incident of the lighthouse barn being used for a dance by the local young people.

Two early-day visitors to the lighthouse left interesting accounts of their visits. In 1869 the editor of the San Diego Union wrote,

> A short drive up the ridge brought us to the lighthouse upon the "towering topmost height." A fence inclosing about an acre and a half surrounds it. Mr. Jenkins, the keeper, met us at the gate and escorted the ladies to the entrance where they were received by his wife. Neatness

THIS PHOTOGRAPH WAS DATED OCTOBER 24, 1888, SHORTLY AFTER PAINTING THE MASONRY WHITE. HOWEVER, AFTER CLOSE EXAMINATION, THIS PHOTOGRAPH APPEARS TO BE AN ENLARGED PORTION OF ANOTHER PHOTOGRAPH DATED 1890's. From historical collection Title Insurance and Trust Company, San Diego, California

and order prevailed in the little enclosure. The flower beds surrounded by abalone shells, the tidy walks and neatly arranged beds of cultivated earth told at a single glance the story of the taste and industry of these industrious inhabitants of this lonely tower. Beside the walls of the house some tomatoes were just ripening, while well grown potato vines and other garden vegetables luxuriated in the genial sun and wooing breeze.

Five years later, in 1874, a reporter for the Union left a less romantic, and undoubtely more realistic, account of the station. The reporter, a lady, wrote,

> The lighthouse upon the extreme point of Point Loma is some fourteen miles from San Diego and is approached by one of the most beautiful drives in the world, to those who enjoy the cool, bracing breezes. . . . The buildings consist of a very neat and commodious dwelling house surmounted by a tower fifteen feet high, also several immense sheds erected by the government for the purpose of catching rain-water enough during the rainy season to fill the cistern. These roofs are very flat and are arranged with spouts, etc. Water and wood are items of considerable importance here, both having heretofore been brought from San Diego. We were conducted through the entire establishment by the gentlemanly keeper, Mr. Israel, and his wife, who is his assistant in the care of the light, which is very ingenious. Everything is scrupulously clean; the glass reflectors of the lantern fairly dazzle the eyes. There is a small room in the tower, below the light, for the accommodation of the watchers, and here they pass the long hours of the night, watching alternately the light of the huge lantern,

HORSE AND BUGGY IN FRONT OF POINT LOMA LIGHTHOUSE IN THE 1890's, COMPARE WITH PREVIOUS PHOTOGRAPH DATED OCTOBER 24, 1888. From historical collection Title Insurance and Trust Company, San Diego, California

which is a welcome beacon to the "toilers of the sea" who may be within reach of its rays. The light, which is 480 [actually 462] feet above the ocean can be seen upon clear nights a distance of sixteen or eighteen miles. The roar of the wind about the tower is almost deafening, and necessitates the voice being raised to the highest pitch whilst conversing within.

The vegetation around the lighthouse is very meagre, consisting of a very low, scrubby sage brush. Mrs. Israel told us that she had endeavored in vain to make a few of the most hardy flowers and vegetables grow, but the position was too much exposed to admit of cultivation. . . .[53]

Undaunted by the inhospitable clime which made growing vegetables so difficult, Mrs. Israel set out a tomato plant near the kitchen door, and by careful nursing and pampering she kept it alive and yielding for several years.

Mrs. Israel served as assistant keeper for three years, but it is not known whether her husband made her stand her regular watch at night or not. Some say he did and that Mrs. Israel whiled away her watch-hours knitting. She would sit in her rocker on the first floor as near the stair well as possible. A circular hole, probably called the sleeping drum, in the deck of the

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53. Ibid.; List of Lighthouses, Lighted Beacons, and Floating Lights on the Atlantic, Gulf, and Pacific Coasts of the United States, 1888 (Washington: 1888), p. 75; Winifred Davidson, "El Cabrillo National Monument," ms, files, Cabrillo National Monument; "Lighthouse Board Journal, September 4, 1854 to July 19, 1862," v. 2, USCG, RG 26, NA. San Diego Herald, Oct. 2, 1858.

tower permitted the light from the lamp in the lens to beam downward providing just the light Mrs. Israel needed to do her knitting.

Mrs. Israel turned her hand to other decorative art. With various small shells her children collected from the tidepool area below the lighthouse she made beautiful and intricate floral designs. These designs were placed in heavy wooden frames which were decorated principally with chiton shells and fragments of abalone shell. Abalone shell, incidentally, with its varicolored pearl-like interior could be shaped into a great variety of attractive personal adornments. One of the assistant keepers, David Splaine, carved buttons for his little daughter's topcoat from the shells; two of these buttons are in the museum collection at Cabrillo National Monument.

Captain Israel continued to serve as keeper of the Point Loma lighthouse for nearly twenty years. When the light was moved from its promontory on top of Point Loma to the ocean's edge in 1891, he moved with it. He was keeper at the new lighthouse for nearly a year when a disagreement ended in his being dismissed. In 1888 the Point Loma Light Station's boat was lost by one of Israel's sons and a son of the assistant keeper. When the District Inspector heard about the loss he assessed the value of the boat at $100 and recommended that the keeper and assistant keeper each be charged $50. Israel received his next pay minus the $50, and protested the deduction. The Lighthouse Board denied his request in 1889 that he be reimbursed. Israel appears to have filed for reimbursement again in 1890, and the Board took the same action it had previously.

Meanwhile the building of the new light station moved along, and eventually the Israels moved down there. Nevertheless,

the $50 deduction continued to rankle Captain Israel, and he appears to have become dispirited. In November, 1891, the Board wrote Israel that the recent inspection of the light station was unsatisfactory. "The lens," the Board said, "was not clean and the grounds were in disorder. The Inspector stated that since the station was moved to its present location it appears to have gradually gone down, and that you do not seem to understand the necessity for an orderly and systematic performance of duty."

The Board said it regretted receiving such a report about a long-time and experienced keeper, but that if things did not improve by the next inspection, Israel would be dismissed.

Captain Israel apparently did not care what happened to him, and in December, 1891, the Board sent a letter to him stating he had been removed as keeper. On January 9, 1892 the Board appointed George Brennan as keeper of the Point Loma Lighthouse.[54]

During the first 34 years of its existence the Old Point Loma lighthouse exhibited a fixed white light beaming in all directions. But later the Lighthouse Board felt that the lighthouse needed a more distinguishing characteristic light in order for it not to be confused with other lighthouses in the vicinity or other lights

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54. Interview between Robert D. Israel, III and Francis R. Holland, Jr., Dec. 13, 1961, San Diego, recording in files of Cabrillo National Monument; "Keepers of Light Stations, Division of Appointments, Office of the Secretary of the Treasury." Series V, v. 6; R. D. Evans to Nicoll Ludlow, Washington, Oct. 9, 1888, L.H. Bd., Letters to Inspector, 12th Dist., July 1, 1887-June 30, 1889; George W. Coffin to Thomas Perry, Washington, Dec. 2, 1890; R.D. Coffin to Israel, Washington, Nov. 28, 1891; and Coffin to Perry, Washington, Dec. 19, 1891, L.H. Bd., Letters to Inspector, 12th Dist., July 1, 1890-Dec. 31, 1891; all in USCG, RG 26, NA.

which happened to be along the coast. On April 1, 1889 the characteristic of the light was changed to "fixed white varied by flashes, alternately red and white, interval between flashes one minute."[55]

Normally a flashing characteristic in a Fresnel lens is obtained by rotating the lens. But the Point Loma lens had not been designed to rotate; rather, it was fixed in place. Conceivably the lens could have been replaced with one which rotated. Either modifying the lens or exchanging it would have been an operation which took a week or more to perform--quite a long time for a lighthouse to be out of service. There is no historical evidence that either event occured. Actually what probably happened was that a rotating shield inside the lens was used. Such a shield was used at Point Pinos and was seen by the writer less than two years ago.

The shield is a frame-type device shaped to conform to the interior of the lens. A slightly curved piece of metal roughly equivalent to the size of one lens panel was stretched from the topmost part of the frame to the bottom piece. As this device revolved slowly inside the lens the shield would blank out the light from each panel as it passed. The mariner at sea sees only the light from one panel of the lens; consequently, such a light to him would be flashing.

Little imagination would be required to place also a red shield on the frame, spaced so that the blank shield would blot out the light and, after it passed on, ten or fifteen seconds of white

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55. List of Lighthouses, Lighted Beacons, and Floating Lights on the Atlantic, Gulf, and Pacific Coasts of the United States, (Washington:1890).

light would appear and then the red shield would slowly swing into position and cause the lens to emit a red light. After the red shield moved on around in its circle a white light would emit from the lens until the blank shield once again swung into position. Since the frame could be adjusted to rotate as slowly or as fast as desired, it would be possible to secure a flash of any desired length.

The flashing red and white light continued to be the characteristic of the Point Loma lighthouse even after it was moved to the ocean's edge. It is interesting to note that when the lens was made for the new lighthouse certain panels of the lens were made with red glass. As events turned out, though, the lens was never used at Point Loma. The lens was such a work of art that it was displayed at the Paris exhibition where it won a prize and again at the Columbia Exposition in Chicago where it vied with Little Egypt for attention. At this latter fair the lens won another medal and because of it lost out on its new home. By the time the Exposition was over the new Point Loma lighthouse already had a lens, and the prize-winning one ordered for it wound up in the Chicago Harbor lighthouse where it is today.

At about the same time the characteristic of the light was changed, Captain Israel received orders to reduce the lamp from three concentric wicks to two. This maneuver saved one-half gallon of fuel a night. Since kerosene was then selling for 14¢ a gallon, it meant that at the Point Loma light station the government was saving a whopping $25 a year in fuel, and the only effect the eliminating of the wick had was to cut the candlepower of the light from 158 to 73. Captain Israel was disgusted and complained that the light could barely be seen. How long the order remained in force is not known.

Also about this time the long desired moving of the light was coming to fruition. For years it had been recognized that the light was too high--indeed, it was the highest lighthouse in the United States--and that the lighthouse was "often obscured by high fog, while the rest of the coast line is distinctly visible, and it is thus made of little practical value as an aid to navigation. . . ." A new site was selected at the tip of Point Loma some 30 feet above sea level. Situated as it was 422 feet above sea level the light house had served not only as a coastal light, but also as a harbor light. Moving the light to the proposed new site meant that the Point Loma light could no longer fill its secondary role as harbor light. The Lighthouse Board recognized this deficiency and recommended that a fifth order harbor light be erected at Ballast Point at such time as the old light was moved.

In 1882 the wheels of the machinery of government began to turn. The army controlled, with the exception of the lighthouse reservation, all of the land on Point Loma, and the Secretary of the Treasury applied to the Secretary of War for land to erect the two new lighthouses. In 1889 the army transferred the requested land to the Lighthouse Board on the condition that it "be vacated at such time as the needs of the War Department require."

Bids were immediately received and opened in August of the same year. Construction was soon begun and most of the buildings were finished by June, 1890. Some difficulty was experienced in securing the right size lens, but one was finally obtained and placed on the metal skeleton tower. On March 23, 1891, the light was exhibited for the first time.[56]

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56. San Diego Sun, Aug. 20, 1889; Annual Report of the Lighthouse Board, 1882, (Washington: 1882), p. 58; Redfield Proctor to Secretary of the Treasury, Washington, April 8, 1889, and S.V. Benet to Secretary of the Treasury, Washington, May 14, 1889, both in Site file, NA; Point Loma Notes, p. 6.

With the moving of the light the Old Point Loma lighthouse fell on evil days and for the succeeding forty years it was to know few good times. The out-buildings remained for a while, but in time disappeared. The Lighthouse Board in 1895 gave permission to move the barn to the new light station. Vandals did their work on the lighthouse itself, and windows were broken, pieces of the old building were carted away, and the basement reeked of human excrement. By 1913 it was in a dilapidated condition and the commanding officer at Fort Rosecrans recommended that it be torn down.

The old building had become a favorite tourist spot because of the magnificent view from the old tower. By this time the old ruins had acquired the cognomen "Old Spanish Lighthouse." How and why this inaccurate name unfortunately became attached to the building is not known for sure. One historian has contended that the name came about for two reasons: (1) tiles from the old Spanish Fort Guijarros were used in the construction of the building, and (2) the keepers married women of Spanish descent and as a result only Spanish was spoken about the light station, Spanish dress was worn, Spanish dishes prepared, and in general a Spanish air prevailed about the place. It is true that tiles from the old Spanish fort were used in the basement of the light house, but that is hardly any reason to refer to the structure as Spanish. One wonders, however, whether there was a Spanish atmosphere about the place or not. None of the early visitors to the lighthouse mention any Spanish trappings. Moreover, the grandson of the long time keeper, Robert Israel, reports that during the years he lived with his grandparents his grandfather discouraged Mrs. Israel from inculcating the children with even the semblance of her Spanish heritage. He chided her especially severely when she spoke Spanish to the children. Captain Israel felt that since California belonged to the United States the children should be

NEW POINT LOMA LIGHTHOUSE, CIRCA 1892. From historical collection Title Insurance and Trust Company, San Diego, California

raised as Americans, not foreigners; after all, they would have to make their way in the world as Americans.

Evidence indicates that the term "Old Spanish Lighthouse" is of 20th century origin. In 1913 the commanding officer of Fort Rosecrans pointed out that, although erroneous, the lighthouse often had that name applied to it. Thus his statement indicates that although a popular name, the term "Old Spanish Lighthouse" had not been in use long enough to have completely supplanted the facts. Consequently, it would appear that another historian was much nearer the truth when he contended that the name came into being in the early 1900s because of a local Negro guide named Ruben who had little regard for facts and sought only to improve his tour by romanticizing the old ruins which blemished Point Loma.[57]

At any rate the writer has not seen, nor has he heard of any one who has seen, a reference to "Old Spanish Lighthouse" during the active years of the structure.

Nevertheless, as the "Old Spanish Lighthouse," the ruins attracted many visitors and attendant vandalism. The Lighthouse Board learned in 1906 that the inside of the tower "is defaced with vulgar drawings and pictures," and directed the District Engineer to have the tower whitewashed inside and out. Nevertheless, further vandalism, coupled with lack of upkeep, caused the building

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57. Winifred Davidson, A Brief History of the Old Spanish Lighthouse, (Point Loma: 1926); Jerry MacMullen, "How Spanish was the Old Spanish Lighthouse," Westways, June 1954; AGO Document No. 1988693, Letters Received, Adjutant General's Office, RG 94; John Mishkin (?) to W.H. Heuer, Washington, Jan. 14, 1895, L.H. Bd., Letters to Engineer, 12th Dist., Jan. 1, 1895 to Dec. 31, 1896; Geo. Wilder to H.E. Nichols, Jan. 14, 1895, L.H. Bd., Letters to Inspector, 12th Dist., July 1, 1894-Dec. 31, 1896, USCG, RG 26, NA.

OLD POINT LOMA LIGHTHOUSE SHORTLY AFTER IT WAS ABANDONED. From historical collection Title Insurance and Trust Company, San Diego California.

to become an eyesore. Around 1913 the commanding officer at Fort Rosecrans proposed repairing the building and converting it into a military radio station. However, about the same time other wheels were turning and a movement was underway to erect a memorial to Juan Rodriguez Cabrillo, the discoverer and explorer of the west coast of the present United States. The Order of Panama, an organization dedicated to commemorating California's Spanish heritage, was spearheading the drive for the memorial, and they proposed that it take the form of a statue 150 feet tall to be placed "on that noble and commanding cape, Point Loma which is . . . the first land ever seen by a civilized man on the Pacific verge of the United States."

Point Loma, though, was under jurisdiction of the War Department, and, consequently, the Order of Panama had to negotiate with the army for a site for the Cabrillo statue. The first site selected was 300 feet south of the Old Point Loma Lighthouse. But the army had plans for that particular spot, and as a result recommended the site on which the lighthouse stood. In a meeting between the Commanding Officer of Fort Rosecrans and the Memorial Committee it was agreed that the site was most appropriate. The old lighthouse ruins could be obliterated and on the spot the huge statue of Cabrillo could be erected. The Committee even consented to letting the army establish its radio station in the pedestal of the statue.

As a result of this activity a presidential proclamation dated October 10, 1913, was signed setting aside one-half acre of ground surrounding the Old Point Loma lighthouse as Cabrillo National Monument, and the Order of Panama was given permission to erect their heroic statue.[58]

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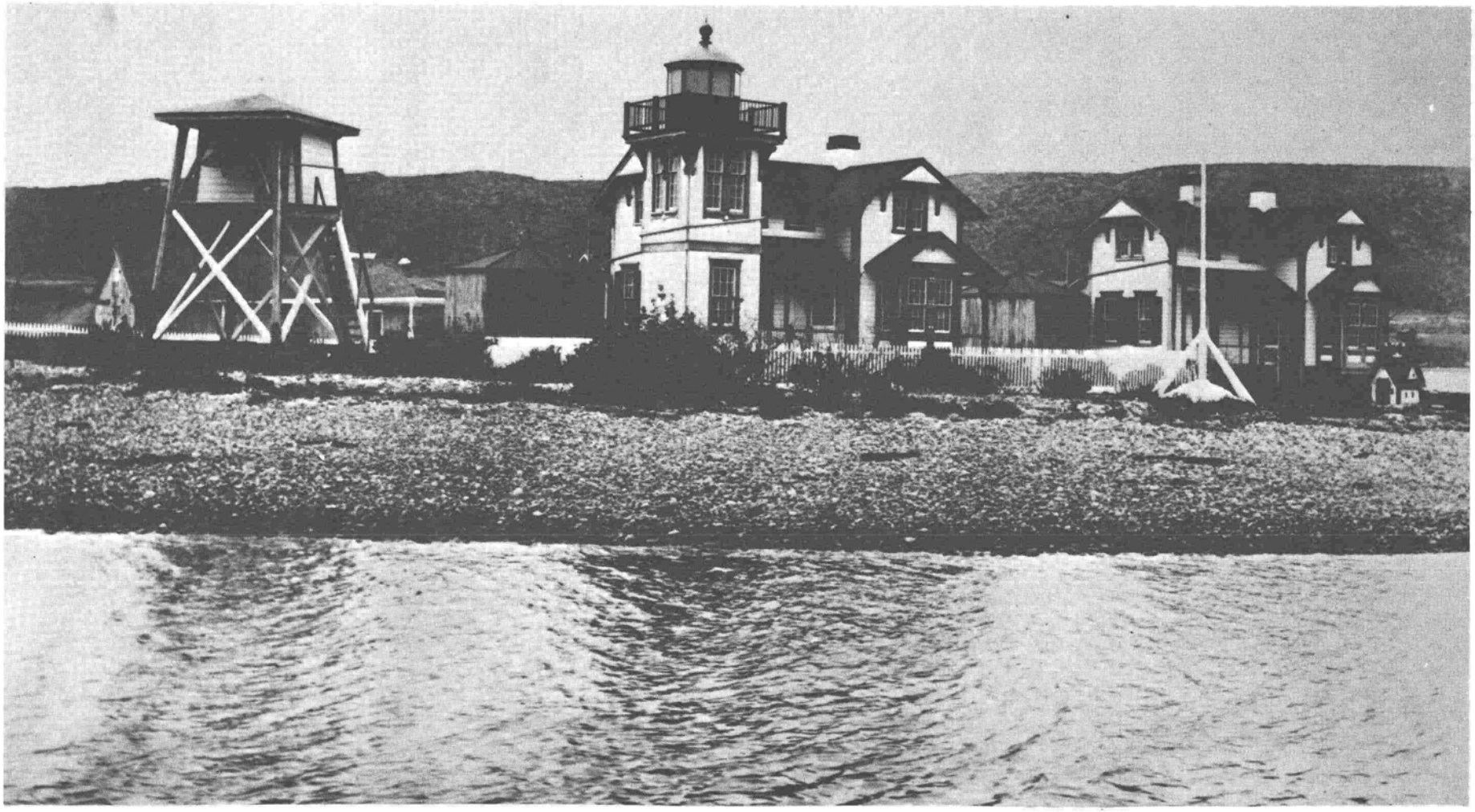
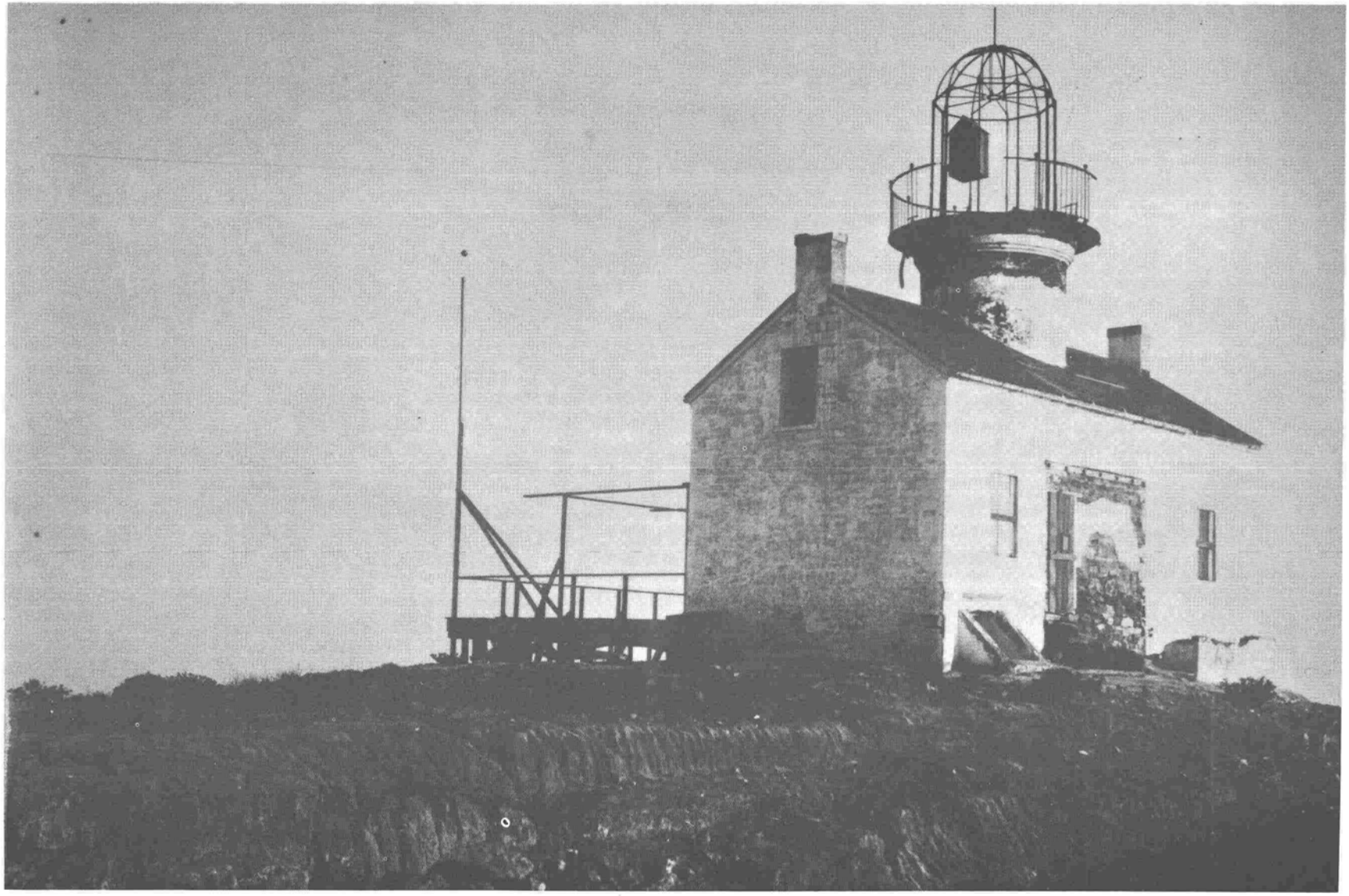
58. Francis R. Holland, Jr., "A Short History of Cabrillo National Monument," Western Explorer, v. 2, no. 2 (August 1962): 27-29.



BALLAST POINT LIGHTHOUSE, CIRCA 1900. From historical Collection
Title Insurance and Trust Company, San Diego, California

ABANDONED POINT LOMA LIGHTHOUSE, CIRCA 1900. From historical collection Title Insurance and Trust Company, San Diego, California.

ABANDONED POINT LOMA LIGHTHOUSE, CIRCA 1913. LARGE STAND IN FRONT OF BUILDING WAS STAGE USED IN DEDICATION OF CABRILLO NATIONAL MONUMENT, SEPTEMBER 26, 1913. From historical collection Title Insurance and Trust Company, San Diego, California



ABANDONED POINT LOMA LIGHTHOUSE ABOUT 1913, NOTE OUTLINE OF LEAN-TO. From historical collection Title Insurance and Trust Company, San Diego California.

ABANDONED POINT LOMA LIGHTHOUSE AS A TOURIST ATTRACTION ABOUT 1910. From historical collection Title Insurance and Trust Company, San Diego, California

The Order of Panama, fortunately, never carried through with their plans and in time they became a defunct organization. The old lighthouse remained, now part of a National Monument and the responsibility of the War Department.

In 1915 the army spent $360 repairing the old building and reported that "further improvements are contemplated. . . ." About this time Mrs. Elizabeth T. Arnold proposed that the old lighthouse be turned over to the California Federation of Women's Clubs. To this proposal the army turned their thumbs down saying that several military installations were planned for the vicinity of the lighthouse. The army said it would, however, have no objections to the ladies placing a plaque on the old structure. But nothing ever came of the proposal, and the lighthouse continued, in its shabby condition, to receive many visitors. In the fall of 1916 the army noted that the old building was one "of considerable historical interest. . . ." Since there were no restroom facilities and the visitors used "the basement and some of the . . . rooms rendering the building unsanitary . . .," the army recommended building a concrete comfort station.[59] Nothing came of the proposal.

In an effort to stabilize the deterioration of the old lighthouse, and perhaps rehabilitate it somewhat, the army encouraged soldiers and their families to live in the old building. Undoubtedly, this move at least had the effect of halting temporarily the decline of the old structure. The army also,

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59. E.F. Sweet, Asst. Sec. of War, to William Kettner, [Washington], June 10, 1915; AGO Document No. 2090523, Letters Received, AGO, RG 94; Engineer Secretary to Engineer, 12th L.H. Dist., Washington, Dec. 1, 1906, L.H. Board, Letters to Engineer, 12th Dist., Jan. 1, 1906-Dec. 31, 1906, USCG, RG 26, NA.

ABANDONED POINT LOMA LIGHTHOUSE, EARLY 1900's
From historical collection Title Insurance and
Trust Company, San Diego, California.

around the mid-twenties, used the building as a radio station. But all of the activity was of a transitory nature, and after each use the lighthouse resumed its downhill march to extinction.

By 1930 the wooden lean-to in the back of the old building had fallen away. The large concrete catch basin in the front of the building was still there and two large lumps on the edge denoted the cisterns. The frame work of the lantern was enclosed in a wooden structure and there was a wooden rail around the gallery to keep visitors from falling off.

The old lighthouse was a sad and forlorn site. Capt. Fenton Jacobs, commanding officer at Fort Rosecrans, notified several Chamber of Commerce people that the old lighthouse was an eyesore and in danger of being razed. He said the army received no money for the preservation of historic sites, and unless private funds were raised the old building was doomed. A group from the Chamber of Commerce banded together to raise money "by subscription from a few interested citizens," to restore the old lighthouse and beautify the grounds. There was a brief flurry of activity and several businesses evinced interest in the project. But like many other efforts related to the Monument, this exercise amounted to nothing more than pious mouthings.

The following year the Ninth Army Corps found funds to renovate the old lighthouse. Holes in the roof were patched, windows were replaced and iron bars put over them, and the building was repainted inside and outside.[60]

This effort was enough to stabilize the lighthouse until 1933 when Cabrillo National Monument was turned over to the

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60. San Diego Union, July 14, 1929, Aug 13, 14, 1930, April 19, 1931.

ABANDONED POINT LOMA LIGHTHOUSE AS TOURIST ATTRACTION AND APPARENTLY ARMY RADIO STATION. From historical collection Title Insurance and Trust Company, San Diego, California

ABBANDONED POINT LOMA LIGHTHOUSE, BUILDING APPARENTLY BEING USED AS A RADIO STATION BY THE ARMY. From historical collection Title Insurance and Trust Company, San Diego, California

ABANDONED POINT LOMA LIGHTHOUSE AS A LIVING QUARTERS. NOTE CISTERN IN FOREGROUND. From historical collection Title Insurance and Trust Company, San Diego, California.

National Park Service. Plans were laid immediately to rehabilitate the old lighthouse. The building was examined minutely and drawings of it were made for the Historic American Buildings Survey and these drawings were deposited in the Library of Congress. From the historic record and the building itself, the architects learned a great deal and they began to restore the building to what they thought was its original condition. Rotten wood was replaced, the lean-to was rebuilt, the flooring was renewed throughout, and the metal lantern crowning the tower was reconstructed. Certain modern concessions were made because of the intended use of the building. Electric fixtures were installed, as was plumbing. Doors, door frames, and window sashes were made of metal for fire protection purposes. The basement was completely refinished. And the wooden treads and risers in the tower stairway were replaced with metal.

The work was completed in 1935 and the concessioner, who was also custodian of the monument, set up his operation in the lower south room. Later he operated a tea room in the lower north room. The concessioner also lived in the building.

Many visitors came to the monument to troop through the restored lighthouse structure and to climb the tower to enjoy the awing view. It was a favorite spot for tourists and, aided and abetted by the local Chamber of Commerce and other tourist agencies, the name "Old Spanish Lighthouse" flourished and spread itself throughout promotion literature. During this period there was another effort to attach a romantic sobriquet to the lighthouse. Fortunately, this effort was not too successful. A well meaning local historian--the one who did the 1935 historical research on the lighthouse for the National Park Service--apparently examined the first Pacific Coast Light List which listed the Point Loma lighthouse. She noted that the number at the side of the Point Loma listing was

ABANDONED POINT LOMA LIGHTHOUSE, CIRCA 1925, AS
AN ARMY RADIO STATION. From the National Archives

ABANDONED POINT LOMA LIGHTHOUSE AS A TOURIST ATTRACTION. From historical Collection Title Insurance and Trust Company, San Diego, California.

"355;" she began referring to the lighthouse, when she wasn't calling it "Old Spanish" Lighthouse, as "No. 355." This is a spurious designation. The Lighthouse Board did not assign numbers to its lighthouse, nor did previous administrators. The number "355" was simply a listing number meaning that the Point Loma lighthouse was the 355th aid to navigation in the book that year. Had the following year's Light List been consulted it would have been found that a different number was beside the Point Loma listing.

In 1941 visitation to the monument was abruptly shut off because the military felt the exigencies of war-time security precluded non-military activity on Point Loma. During World War II the lighthouse was used by the armed forces. At first the Navy used it as a signal tower. Ships coming to San Diego were signaled from the tower and if they flashed back the correct sign the submarine nets stretching across the entrance into the harbor were pulled aside to admit the vessel. This signal station lasted for about a year when another tower was built south of the lighthouse. Thereafter the old building was used primarily for storage purposes.[61]

Finally in 1946 the army decided to return the monument to the National Park Service and on November 11, 1946, visitation resumed. A team from Sequoia National Park came down in the spring of 1947 to look the old lighthouse over. They found that three pieces of plate glass in the tower needed to be replaced, floors needed refinishing, the inside and the outside of the structure needed repainting, and the outside of the lantern needed to be sandblasted to remove the camouflage paint the army had put on. It was estimated that the cost for this work, including labor

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61. Interview between Francis R. Holland, Jr. and Voyd Beights. Recording in files of Cabrillo National Monument.

and supervision, would be $3,706. The army was more than willing to have the building repaired to the complete satisfaction of the National Park Service.[62] The work was completed, and the former concessioner took up where he left off when he was interrupted by the war. The lighthouse was reopened and it resumed its role as the centerpiece of Cabrillo National Monument.

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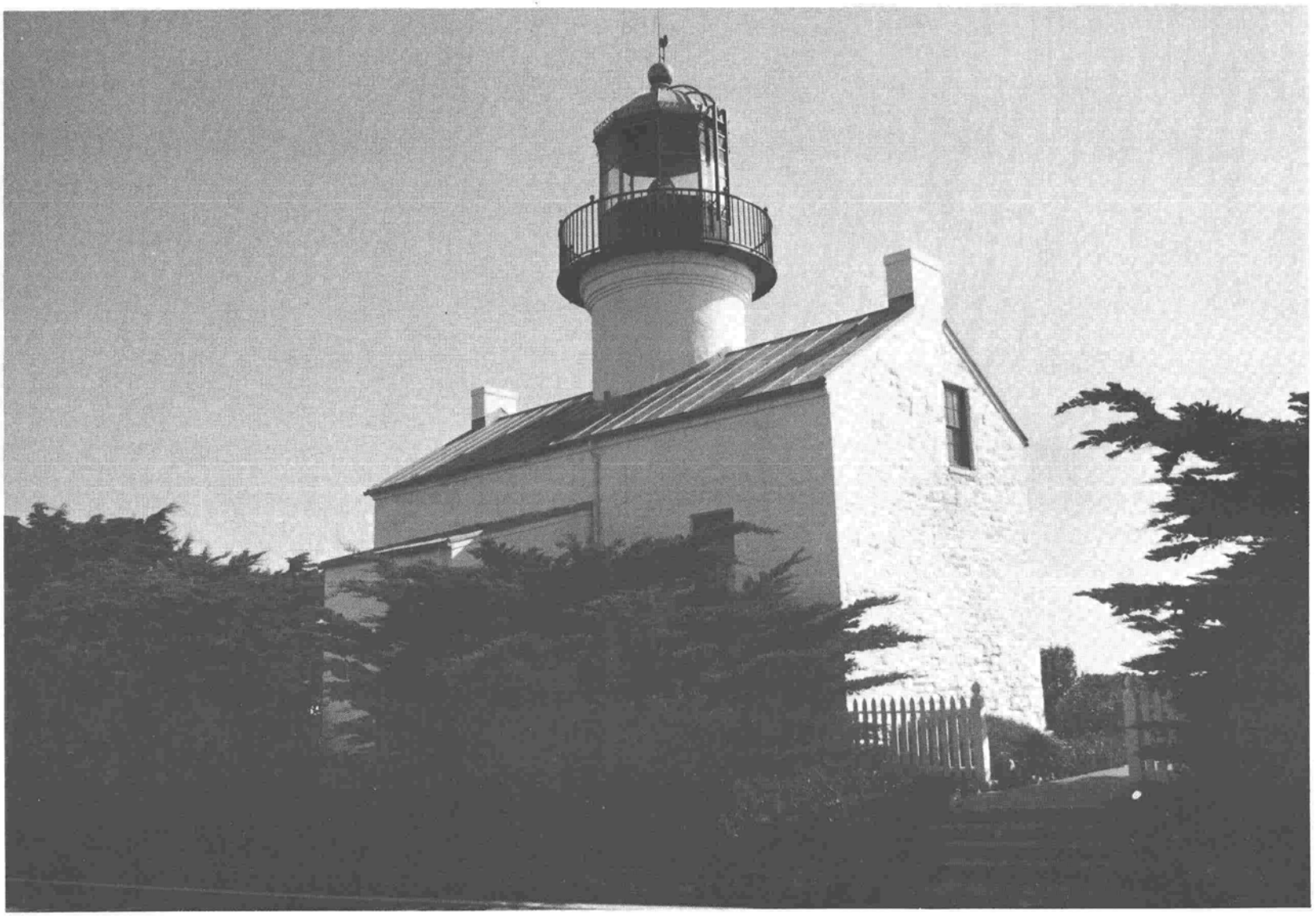
62. Hugh W. Parkes to Superintendent, Sequoia-Kings Canyon National Parks, Sequoia National Park, California, March 10, 1947, in files of National Park Service, Western Regional Office, San Francisco.

OLD POINT LOMA LIGHTHOUSE, 1977. National Park Service Photograph by H. G. Law



OLD POINT LOMA LIGHTHOUSE, 1977. National Park Service Photograph by H. G. Law

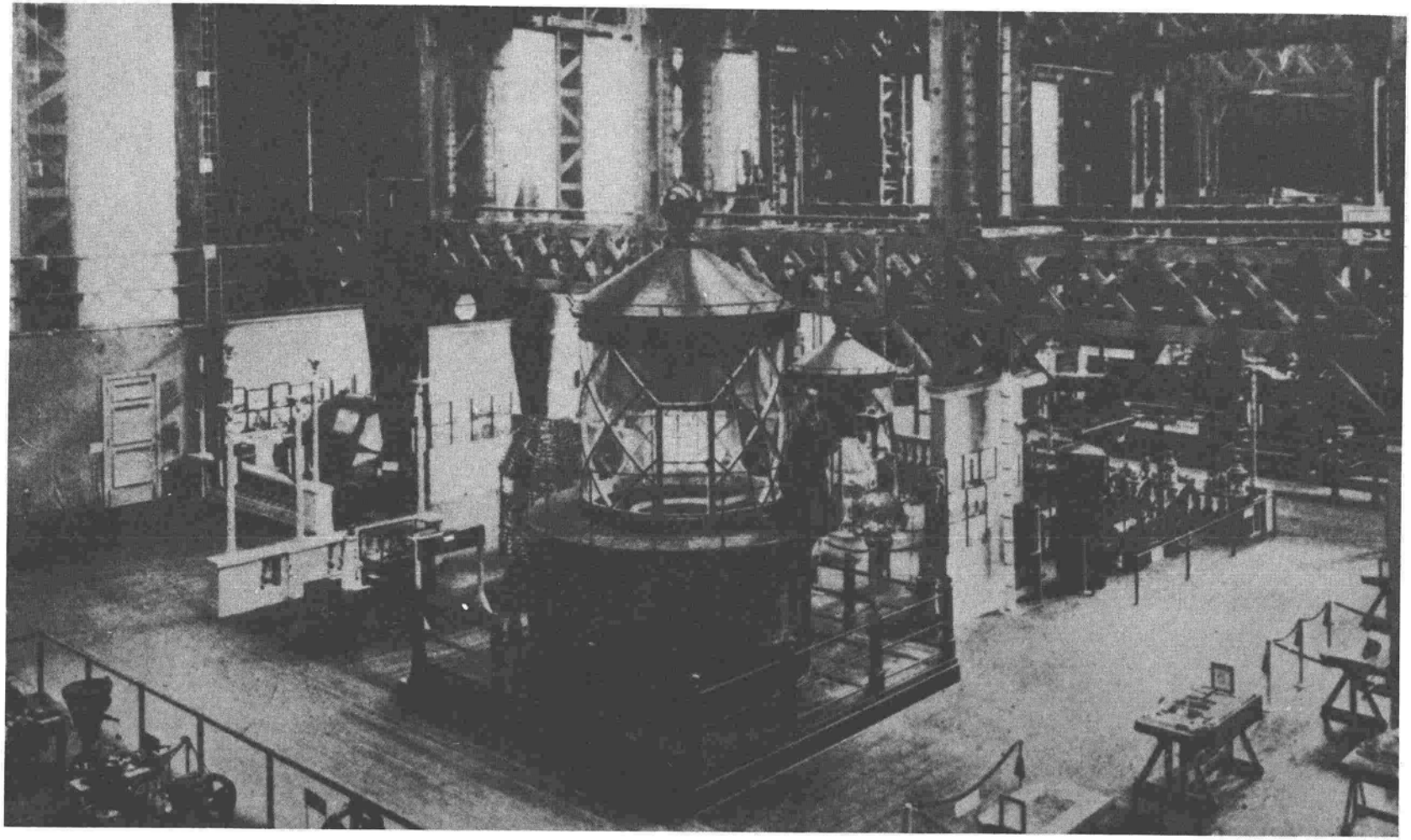


EXHIBIT OF LIGHTHOUSE SERVICE AT PANAMA PACIFIC INTERNATIONAL EXPOSITION, SAN FRANCISCO CALIFORNIA. ALCATRAZ LENS AND FIRST PAINTINGS OF WEST COAST LIGHTHOUSES WERE PART OF THIS EXHIBIT. From Lighthouse Service, The United States Lighthouse Service, 1915.

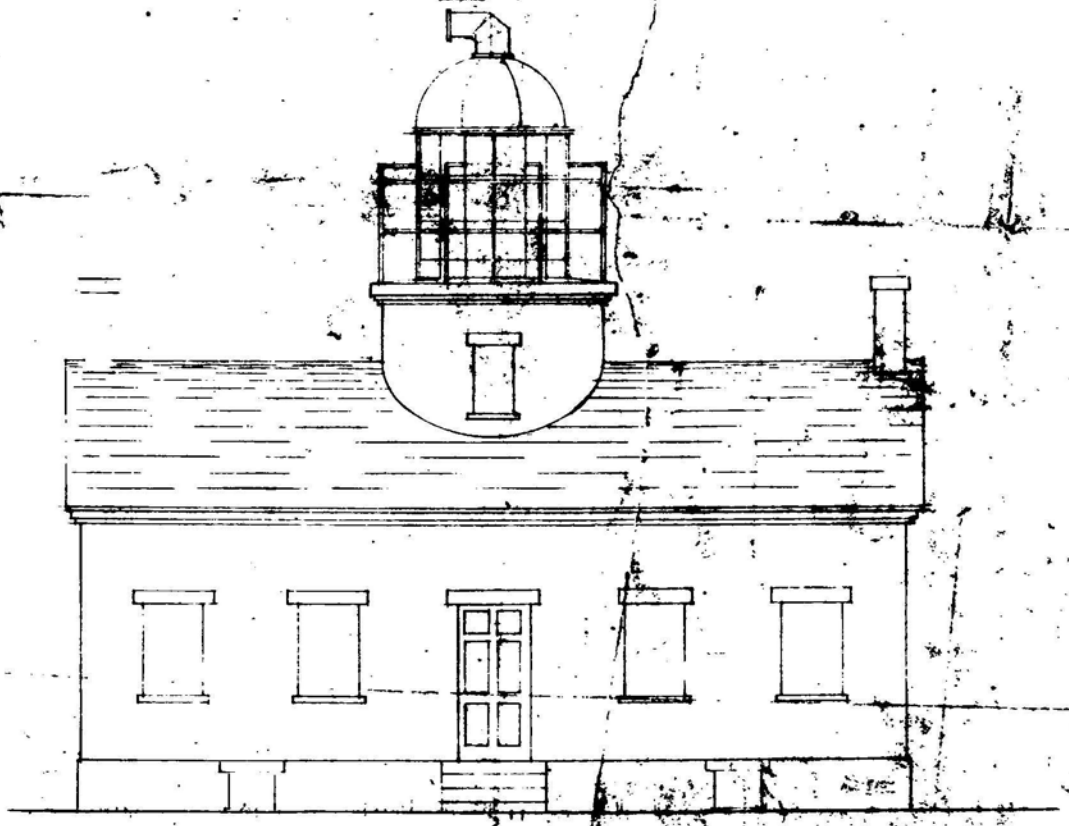
III. HISTORICAL DATA ON LIGHTHOUSE ARCHITECTURE

There is a great deal of general architectural information about the old lighthouse, but detailed information is maddeningly skimpy. Several drawings of the building exist; but such information as the type of flooring, type of walls, location of cabinets, kinds of colors in the rooms, type of fixtures, and kind of wood used in construction has, for the most part, to be inferred from historical evidence available about lighthouses generally. There are several reasons for this necessity. A fire in the Department of Commerce in the 1920s destroyed or damaged many records pertaining to early west coast lighthouses. Moreover, the misfortune that befell the contractors when their ship, with all the construction material for the four lighthouses, sank at the mouth of the Columbia River caused the builders to have to give the spur to their efforts in order to meet the contract deadline; consequently, in their ferment of activity they left few records of their activity in building the last four lighthouses.

In view of the sunken vessel the question arises: where and what type materials did the contractors obtain to build the last four lighthouses? Because of the paucity of records the answer to the "where" question is completely shrouded by the mists of time. But by examination of the information available in the extant records of the Lighthouse Board and the information brought forth in an architectural analysis of the building in 1934, one can make inferences based on strong evidence about the type of material used.

The building itself is actually two structures. One is a Cape Cod type, story-and-a-half dwelling with basement, and the other is a tower which rises through the center of the building and is crowned by a lantern and lens.

Transition Section



Front Elevation

12th Dist.
1 P
filed 1854

Although built together, either edifice could be removed without materially damaging the structure of the other. The Point Conception lighthouse had its tower completely removed and rebuilt. Only some shoring to support the flooring around the tower was necessary to prevent damage to the dwelling in the absence of the tower. Many years after the Humboldt Harbor lighthouse was abandoned the walls had fallen away, but the tower remained standing, intact.

A. Tower

The tower is made of brick and is 33 feet tall. It is crowned by a third order lantern. Although the original specifications for the tower are not now available the following excerpts from Specifications for a Third Order Lighthouse, Brick Tower, printed in 1864 have application to the tower of the Point Loma lighthouse:

> The tower consists mainly of two shells of brickwork, (the outer one a hollow frustrum of a cone, and the inner one a hollow cylinder) connected by means of eight radial walls.
>
> The interior cylinder contains a spiral stairway, consisting of cast-iron steps, whose outer ends are built in the brick-work, and whose inner ends, or hubs, form a continuous central column.
>
> Each step must be placed one-twentieth (1/20) of a circle in advance of its neighbor.
>
> The lantern deck must be of cast iron made in dry sand. . . . The upper side of the deck, for the lens apparatus, must be roughened in the same manner and to the same depth (1/8") as the steps and landing of the main stairway.

> The main gallery will consist of twelve equal segments of cast iron made in sand. . . .
>
> The railing around the main gallery is to be of wrought iron. . . .
>
> All wooden doors and window sashes to be grained in imitation of oak, (except where the wood is already oak,) and to have two coats of coachmaker's varnish.
>
> Whatever is specified as bronze or gun metal, must consist of 9 parts of copper and 1 part tin.[1]

The Point Loma tower had been constructed in 1854 of brick brought from San Francisco. It was inspected a year later by Major Hartman Bache, Lighthouse Inspector for the 12th District, who noted that the "brick [was] of such poor quality, that in places they have wasted away to a depth of a quarter of an inch to two inches." He directed that the "deficient bricks in the tower [be] cut out and replaced by good ones and then so much of the [tower] as rises above the roof of the dwelling, as well as the brick eaves of the latter, plastered or rough-cast with cement. . . ." Evidently the exposed portion of the tower was not painted at that time. In 1858 George Davidson in the Coast Pilot described it as "a low tower of plastered brick. . . ." The Light List for 1856 reported: "The color of the tower is said to be dark." Over the years the Light Lists described it as a "Low grey brick tower, rising from the keeper's dwelling." In 1888 the description was changed for the first time and the tower was listed as being white.

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1. Lighthouse Board, Specifications for a Third Order Lighthouse, Brick Tower, (Washington: 1864), pp. 3-11.

Fixed White

Illuminating Apparatus
3d Order

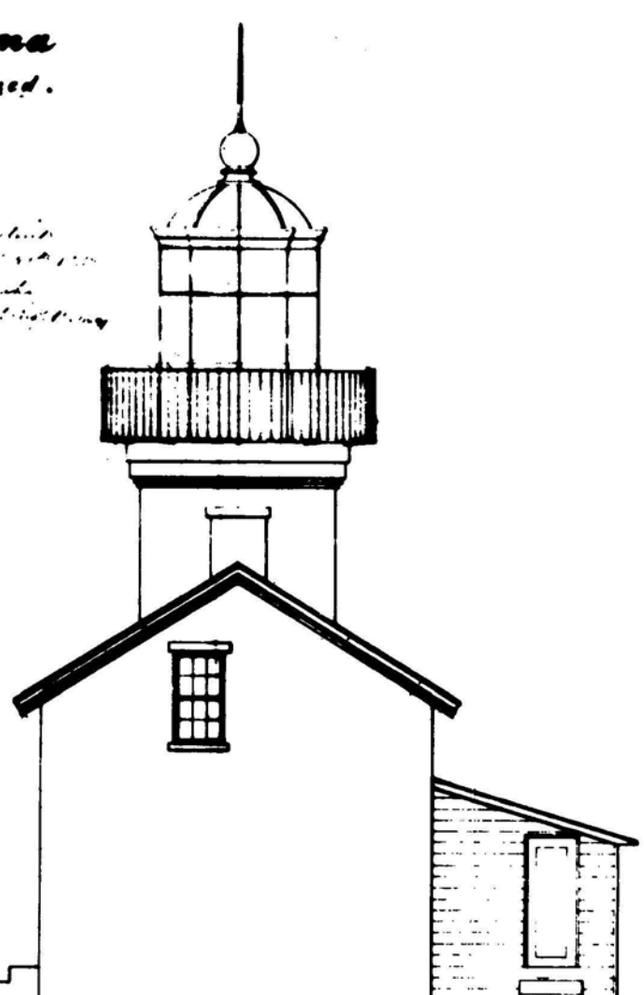
filed 1855.

Point Loma

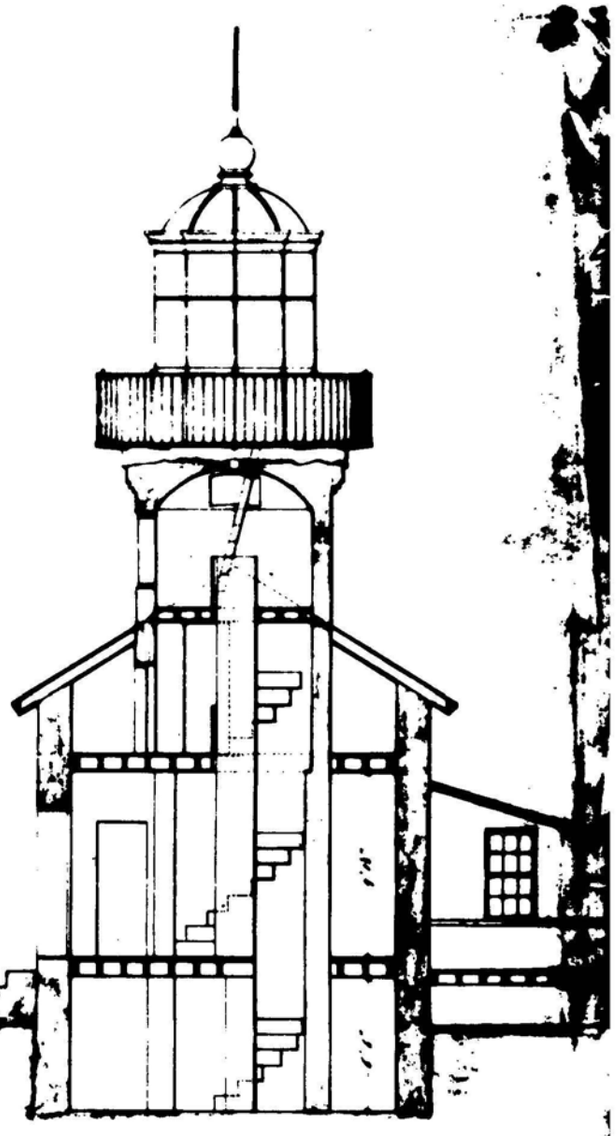
3d Order fixed.

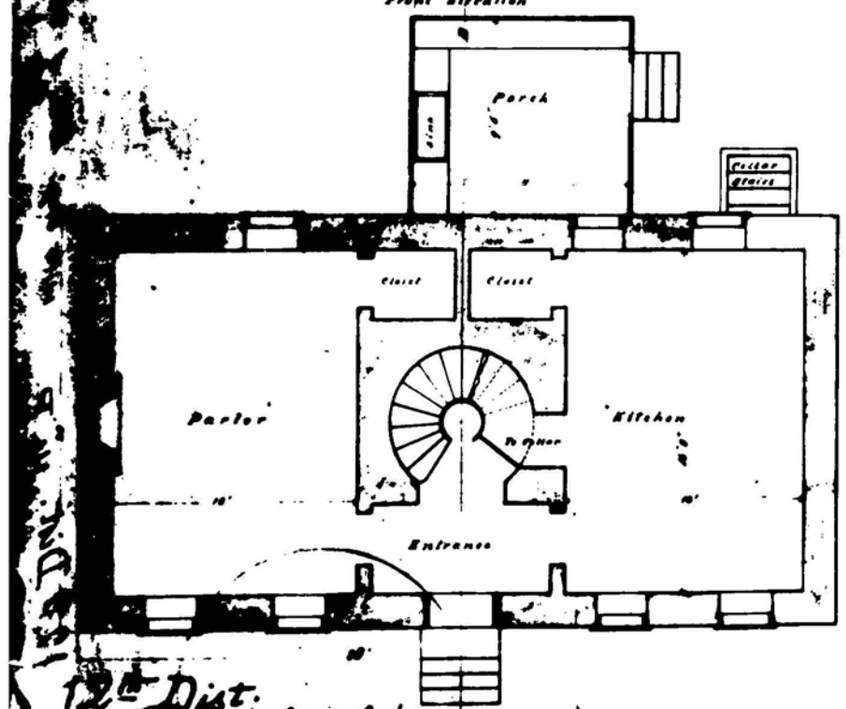
Front Elevation

Rear Elevation

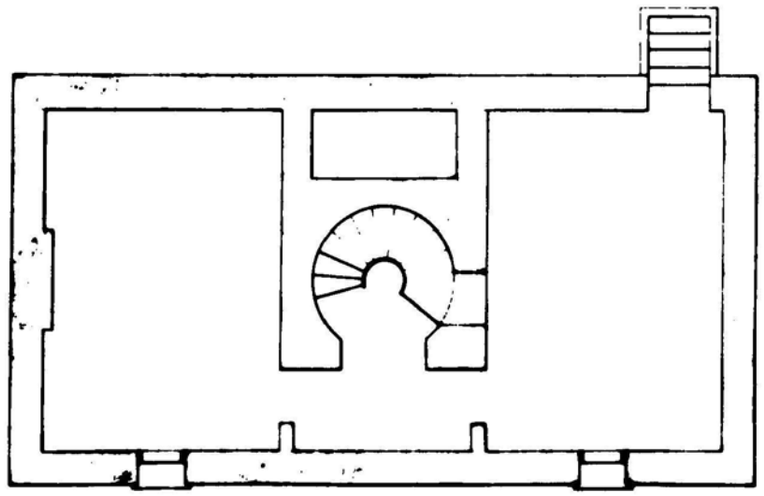


Vertical Section thro. A.B





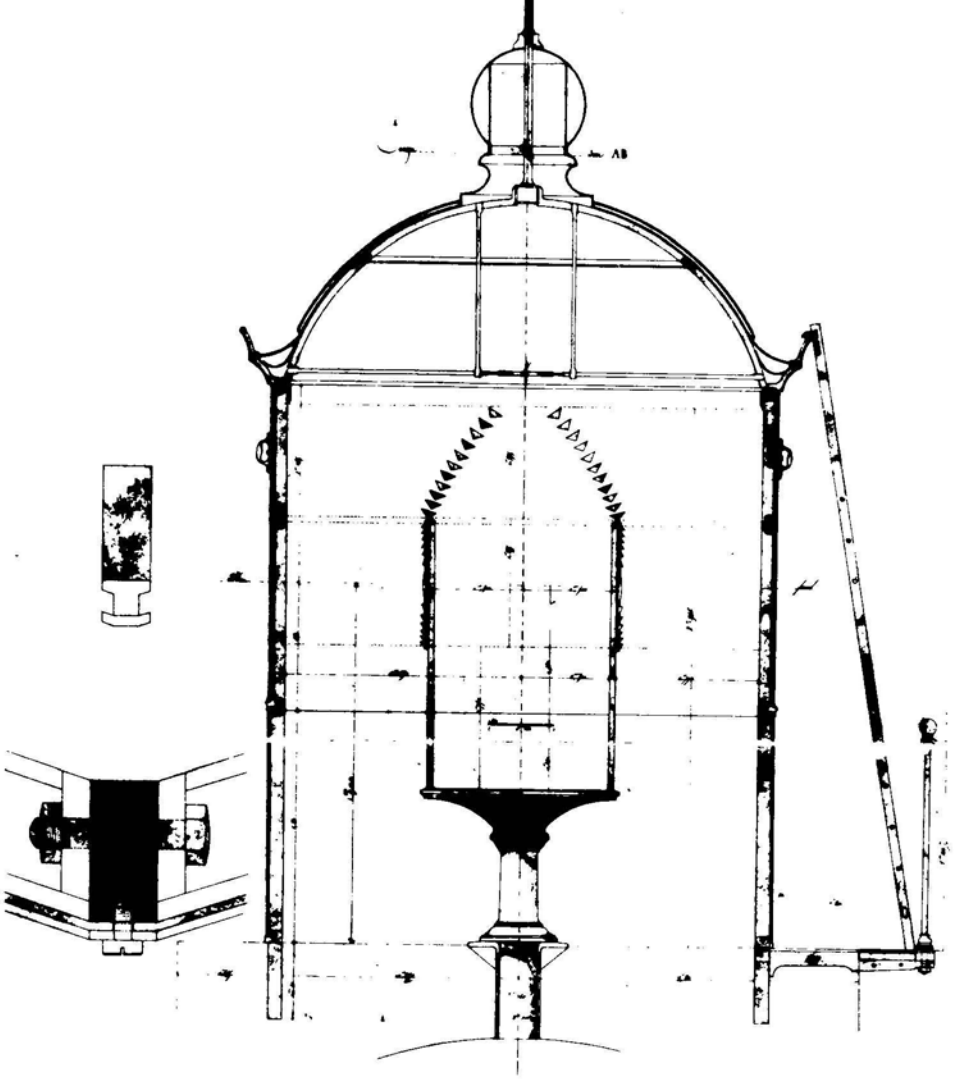
Cellar Plan

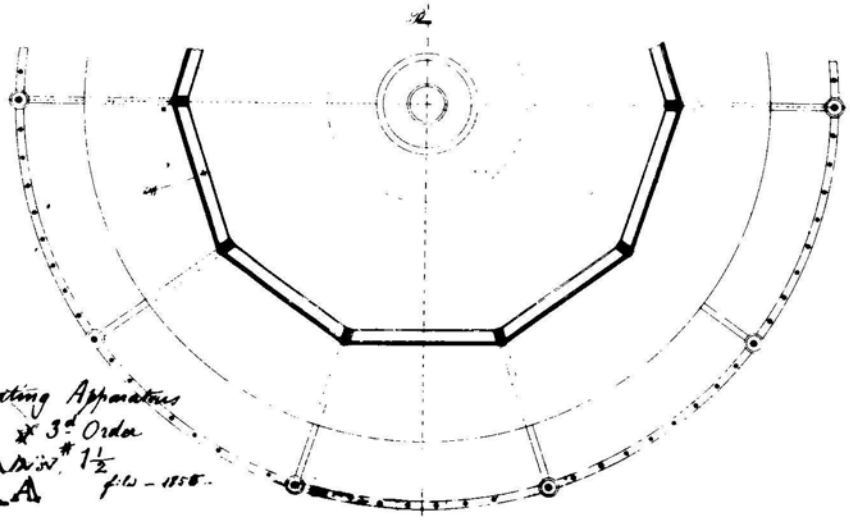


12th Dist.

Phare de 3ème Ordre

à feu fixe.





ting Apparatus
3d Order
1½
fig - 1856.

The lantern crowning the tower was mentioned in the Light Lists throughout the years as being red. In 1888 for the first time it was described as being black.[2] A red lantern was not uncommon on the west coast; many of the first lighthouses there had red lanterns. At one time there were three prescribed colors for lanterns: black, red, and green. By the late 1850s green had fallen into disfavor, and in time red, too, went out of style.

At the time of the 1935 restoration it was found that the interior "brick work in the old tower was very poor. Some of the bricks had eroded very badly. All poor bricks were replaced with new ones." Likewise, the exterior of the tower had many eroded bricks which had been caused by the moisture and salt air seeping through several cracks of many years standing in the plaster of the tower. These eroded bricks, too, were replaced, and the tower was replastered and whitewashed.

Although by the 1860s lighthouse towers were being constructed with metal spiral stairways, at the time the Point Loma lighthouse was built the treads and risers of its stairway were constructed of wood. The point Pinos lighthouse constructed a year earlier had and still has a wooden stairway. At the time the Point Loma lighthouse was worked over in 1935 the "old original wooden steps of the spiral stairway were very badly worn and unsafe." And in view of the contemplated heavy visitation to the restored lighthouse the former stairs "were replaced with a metal stairway."

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2. San Diego Herald, April 8, 15, 1854: Lighthouse Board. List of Lighthouses, Lighted Beacons and Floating Lights of the United States, (Washington: 1856), p. 47; Light Lists for 1870, 1871, 1874, 1875, 1888.

In 1855 when Major Bache was inspecting the Point Loma lighthouse for the first time he reported that the domical arch, which was made of stone, had to be increased in thickness to give adequate support to the lantern and lens. As one stands on the stairway in the tower above the attic floor he can see the ceiling of the tower. He immediately notices that the ceiling is concave. This is the domical arch. The other side of the arch is the deck of the lantern. Major Bache noted in 1855 that in the top of the tower the "holes for the uprights of the lantern, and the channels for the brackets of the gallery, had been cut to receive them." A "sleeping drum" and an iron man-hole were set in the deck of the lantern, "the top of which was leveled off and well coated with cement."[3]

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3. Sam D. Hendricks, "Final Construction Report on Alterations and Restoration of the Lighthouse," pp. 5, 6, 16; Point Loma Notes, p. 2.

In 1885 the District Inspector reported the interior plastering of the tower to be "old, cracked and rotten." He recommended that the plaster be taken off and the tower "replastered, or cemented in place of the plaster to keep the moisture out." The Lighthouse Board approved the action but said that when the plaster was removed the brick should be treated with a soap and alum wash before the new plaster or cement was put over the brick. D.P. Heap to A.H. Payson, Washington, March 23, 1885, L.H. Bd., Letters to Engineer, 12th Dist., July 1, 1880-June 30, 1885, USCG, RG 26, NA.

The soap and alum wash recipe is as follows:

> "Wash first with strong soap water and immediately on top of it with a solution of alum. Three or four coats of each, should be applied alternatively.
>
> "It is said that the soap water enters into the pores of the stone and that the alum afterwards forms with it an insoluable compound which prevents the water passing through."

See D.P. Heap to A.H. Payson, Washington, August 16, 1884, ibid.

It is not known precisely what is meant by a "sleeping drum." Apparently it was an iron drum inserted in the center of the domical arch which perhaps permitted an even flow of air up through the stairway into the lantern in the days when whale, lard, and mineral oil lamps were used.[4] The hole in the arch may have had the additional purpose of permitting the light to be viewed at night by the keeper without his having to climb into the lantern every so often to see if the flame was adequately bright. At the time of the restoration, the drum, or circular hole, was left in the domical arch, but as years passed since some visitors expectorated through the hole and would drop trash and other objects through it, a decision was reached to plug the hole with cement. That is the way it is today.

By 1935 time had taken its toll on the lantern and about all that was left of it was the metal framework and the metal decking of the gallery. Using the Point Pinos lantern as a pattern and the remaining frame as a basis, the sides of the lantern were built up. The lower section of the astragals were fashioned of metal and the upper sections of glass. The original metal decking, which by now had deteriorated to where it was unsafe, was replaced with new, but similar, metal. A wrought iron handrail was installed around the gallery to keep visitors from falling off. The design of the railing was very plain and looks exactly like the gallery railing at the Point Pinos lighthouse today. The dome of the lantern was covered in 48-ounce copper, and the lantern, except the dome, was painted black inside and out.

As indicated previously the guide for the reconstruction of the lantern was the one on the Point Pinos lighthouse. In 1935

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4. See Drawing No. N.M. CAB-3004, Cabrillo National Monument, Repairs to Lighthouse, Feb. 8, 1935, sheet no. 2.

this lighthouse was closely examined by the architects preparing plans for the Point Loma restoration. In general the Point Loma lantern is almost an exact duplicate of the Point Pinos lantern. The Point Loma lantern also conforms to the extant plans of the Alcatraz lantern.

In 1862 Specifications for a Third Order Lantern which was the general one for that size lantern, stated "When finally erected, the lantern must have two (2) additional coats of paint of such color as may be directed, (generally white inside and black outside)." A set of specifications for a specific lighthouse said, "The lantern is to be painted three coats black outside, and white inside." Instructions and Directions to Light Keepers, printed in 1871, said that the interior of lanterns was to be white; the exterior, including balustrades, railing and cowl, was to be red or black. The color set for the dome would determine the color of the other exterior parts of the lantern.[5] Although black was becoming the more standard color for the exterior of lanterns, in 1871 red was still acceptable. However, white is the only color ever mentioned for the interior of lanterns.

Since it has been established that the Point Loma lantern was red what shade of red was used? Instructions and Directions to Light Keepers mentions and describes the preparation of several colors including black, white, and ochre, but the only color mentioned which remotely resembles red is red lead. This was the color most likely meant when red lanterns were mentioned.

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5. James G. Langdon, "Report to the Chief Architect on Research and Investigation, Lighthouse. . . Cabrillo National Monument," in files, Cabrillo National Monument; Lighthouse Board, Specifications for a Third Order Lantern, (Washington: 1862), p. 8; Specifications found with Lighthouse Board, Specifications for a Third Order Lighthouse, Brick Tower, p. 3, in Department of Navy Library; Lighthouse Board, Instructions and Directions to Light Keepers (Washington: 1871), p. 117.

B. Dwelling

1. Exterior

a. Stone Dwelling

The dwelling was constructed mainly of sandstone quarried on Point Loma, probably near Ballast Point. Major Bache in 1855 said the building was "quite a creditable piece of work." The exterior walls are eighteen inches in thickness. The exterior of the building remained in its natural state, uncovered and unpainted, until 1879 when it was noticed that the sandstone was disintegrating. To halt deterioration a heavy coat of portland cement mortar was applied to the west side and south end walls "after which they were painted with two coats of stone color, rubber paint." The other two walls were also given three coats of stone-color rubber paint. In 1887 the dwelling was painted white.[6]

The roof of the dwelling was originally tin and was painted red. By 1865 the roof leaked and the District Engineer recommended screwing, "each square of the tin forming the roof to the wood beneath . . . and then lay over the tin a material called 'Boston Mastic Roofing.'" The Lighthouse Board questioned this procedure, feeling that each screw hole would then become a leak and the mastic would crack and also leak. It would appear that the Engineer heeded the concern of the Board and had the roof shingled, for the 1867 Annual Report said "the roof of the keeper's dwelling was reshingled . . ." In 1880 the Board reported the roof had been repainted, and in 1886 it authorized the District Engineer to purchase materials to reshingle the "east side of roof of keepers dwelling." When the lighthouse was examined in 1934 just prior to

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6. Arthur O. Johnson, "Report to the Chief Architect field assignment as Public Works Projects at Cabrillo National Monument," in files, Cabrillo N.M.; "Point Loma Notes," p. 4.

restoration it was found that the dwelling roof was of shingles over tin.[7]

Originally there were stone steps leading to the main, or front, entrance of the dwelling. There was no landing prior to entering the door, nor were there hand rails. Over the years the stones disappeared and after the lighthouse was abandoned those who used it from time to time built wooden porches in front of the building. A picture taken around 1915 shows a wooden porch stretching almost the complete length of the front of the dwelling. By 1934 there was "a clumsy wood platform and steps" at the front entrance. At the time of the restoration stone steps were placed at the front door, but this time, for the convenience of visitors, they led to a stone landing. For the safety of visitors, handrails, resembling the railing around the gallery of the lantern, were put on each side of the steps and landing. Today the steps and landing are covered with cement; reportedly the stone had become slick and dangerous to visitors.

b. Lean-to

On the rear, or west, side of the building was a wooden attachment which was variously referred to as a lean-to, a porch, and a kitchen. The attachment was enclosed completely and for all purposes was an additional room on the lighthouse. The floor was approximately one foot lower than the main floor of the dwelling, and the lean-to possessed a window on the south side and a doorway entrance on the north. Stairs, two risers high, and a doorway connected the dwelling and lean-to.

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7. "Point Loma Notes," pp. 2-4; Langdon, "Research and Investigation, Lighthouse;" Lighthouse Bd. Journal, July 26, 1862-April 25, 1867, v. 2, pp. 439-440; and Henry P. Pickins to A.H. Payson, March 26, 1886, L.H. Bd., Letters to 12th Dist. Engineer, July 1, 1885-June 30, 1888, USCG, RG 26, NA.

There is practically no information about the construction of the lean-to. The foundation was undoubtedly of stone, and perhaps sandstone was used since by 1880 the foundation was in poor condition and had to be rebuilt. After the lighthouse was abandoned the attachment deteriorated again and in time sheared away from the stone dwelling. The doorway which had connected the dwelling to the lean-to was sealed up, and all that remained were marks and stains on the west wall of the structure outlining where the attachment had been.

There are practically no written statements or descriptions of the exterior of the lean-to. Plans of the lighthouse show that it was made of wood; the construction foreman in 1854 said the lean-to was to be of wood. From the plans one concludes that the exterior was either clapboard or shiplap.[8] And it remained this way over the years. Photographs taken of the lighthouse throughout its period of operation show that the lean-to always had a wooden exterior. A photograph taken a year after the lighthouse was abandoned showed the lean-to to be still wooden. The lean-to then was never mortared, but continued to have a wooden exterior, and the exterior was, as best one can tell from black and white photographs, painted white.

When the lighthouse was restored in 1935 the lean-to was reconstructed according to the dimensions and layout shown on the plans of the lighthouse. The exterior, however, was coated with mortar and painted white so that it looks very much like the stone dwelling.

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8. San Diego Herald, April 15, 1854; "Point Loma Notes," p. 4; Sam D. Hendricks, "Final Construction Report on Alterations and Restoration of the Lighthouse," p. 6.

Also in 1935 a wooden hose house, "as a means for fire protection, in and around the building . . .," was built onto the north wall of the lean-to, adjacent to the steps leading into the lean-to. As far as is known a similar appurtenance did not exist there during the active years of the lighthouse.[9]

2. Interior

a. Basement

The basement can be entered from the outside by a door at the northwest corner of the dwelling. Steps lead down through a wooden door which swings into the basement. Outside storm doors further protect the basement from rain and wind.

As originally constructed the basement was "six feet high in the clear" and according to the inspector in 1855 "well built and painted. . . ." The floor was "laid with tile, from an old Mexican fort near by." Actually the tiles were from the (by that time) long defunct Spanish Fort Guijarros on Ballast Point. The tiles were covered in 1880 when a new concrete floor was laid.

The walls of the cellar were probably left in their natural state when construction was completed. There is no mention of the basement being plastered at this time. In 1880 the Lighthouse Board reported that "the cellar walls were plastered inside with a heavy coating of cement-mortar. . . ." No indication is made that this was replastering work. In 1934 when the lighthouse was being studied for restoration all that remained on the wall were "remnants of plastering. . . ." At the same time it was found that the ceiling was unfinished. Indeed, there is no historical record indicating that the ceiling was ever plastered or

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9. Hendricks, "Final Construction Report on the Lighthouse," p. 7.

finished in any other way.[10] Even today the Point Pinos lighthouse has its basement walls unplastered with the stone work exposed. The ceiling, too, is unfinished and permits one to examine readily some of the construction details of the old building. It is, therefore, highly likely that the basement of the Point Loma lighthouse until 1880 possessed unplastered walls and at no time during its active years had a finished ceiling.

The basement itself consists of two large compartments, each conforming in shape and size to the room directly above it. The compartments are connected by a passageway six feet in width. The foundation of the tower, naturally, is in the basement, and as is the case on the upper floors, the tower is right in the middle of the floor. The inside entrance to the basement is gained from the kitchen on the first floor where one enters by the tower's spiral stairway to the basement. The passageway connecting the basement's two compartments runs in front of the tower, and the area in back of the tower is sealed and was used as a cistern. Major Bache during his 1855 inspection of the building noted:

> The cistern in the cellar being reported as not holding water, ordered the bottom raised by laying a pavement of brick in cement, and then coating the entire interior with the same material. The content of the cistern is but 1,240 gallons. . . .

This cistern held the water used by the lighthouse keepers. Rain on the roof of the dwelling ran into gutters and was carried to

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10. "Point Loma Notes," pp. 2, 4; Arthur O. Johnson, "Report to the Chief Architect, Field Assignment as Public Works Projects at Cabrillo National Monument," p. 3.

down spouts placed diagonally across the ends of the building and coursed on to lower spouts which connected to the cistern. The water was removed for use by a hand pump in the lean-to. A pipe ran from the pump to the cistern which was below and slightly off-set from the lean-to.

Whether this cistern was used very long, or was the main source of water is not known. There is a strong likelihood that a water tank was built outside the lighthouse in 1858. However, the cistern apparently continued to be used since the Lighthouse Board reported repairs being made on it in 1869. In 1882-83 a large concrete catch-basin and 11,000 gallon cistern were installed in the front yard of the lighthouse. Fitted with a Douglas hand pump, this cistern became the main source of water for the light station's inhabitants.

When the building was restored in 1935 the "basement was excavated in its entirety for an average of six inches in order to gain . . . height." During excavation the tile from Fort Guijarros was uncovered. The "hundred or more" pieces were stored in a "a radio building, a few hundred feet northeast of the lighthouse." What happened to these tiles, as well as the other materials from the lighthouse, is not known. All were most likely lost during the activity of World War II when everything on Point Loma was taken over by the military.

After the excavation was completed a "new concrete monolithic [sic] floor was put in, containing a cement floor drain." The drain was placed in the south compartment. In addition the "walls and ceiling were metal lathed and plastered, and the walls were treated so that they would be waterproof."

In the west wall of the south compartment a window, where no one previously had been, was cut. Its size conforms to the original windows in the east wall. Three rooms were built also along the west wall of this compartment: a lavatory with water toilet and wash basin, and two storage closets, one on each side of the lavatory. One of the closets contains a small access way to the cistern which at the time was "cleaned out, creosoted all around and then closed off."

At a later date the north compartment was laid with asphalt tile, and a storage room of plywood was constructed in the south compartment. A frame for a door was installed in the passageway where it enters the north compartment. The east wall of the passageway became the recipient of a vast maze of electrical wires, mains, and switchboxes, and telephone connection boards. A hot water heater was incarcerated in the northeast corner of the basement.[11]

b. Lean-to

There is little written information about the interior of the lighthouse. Most of the information available is that which is in the reports resulting from the 1935 restoration of the old structure.

Since by the time the architects examined the lighthouse the lean-to had disappeared, there is no information on it from that source. The plans indicate the floor of the lean-to had disappeared, there is no information on it from that source. The plans also indicate the floor of the lean-to was lower than the main

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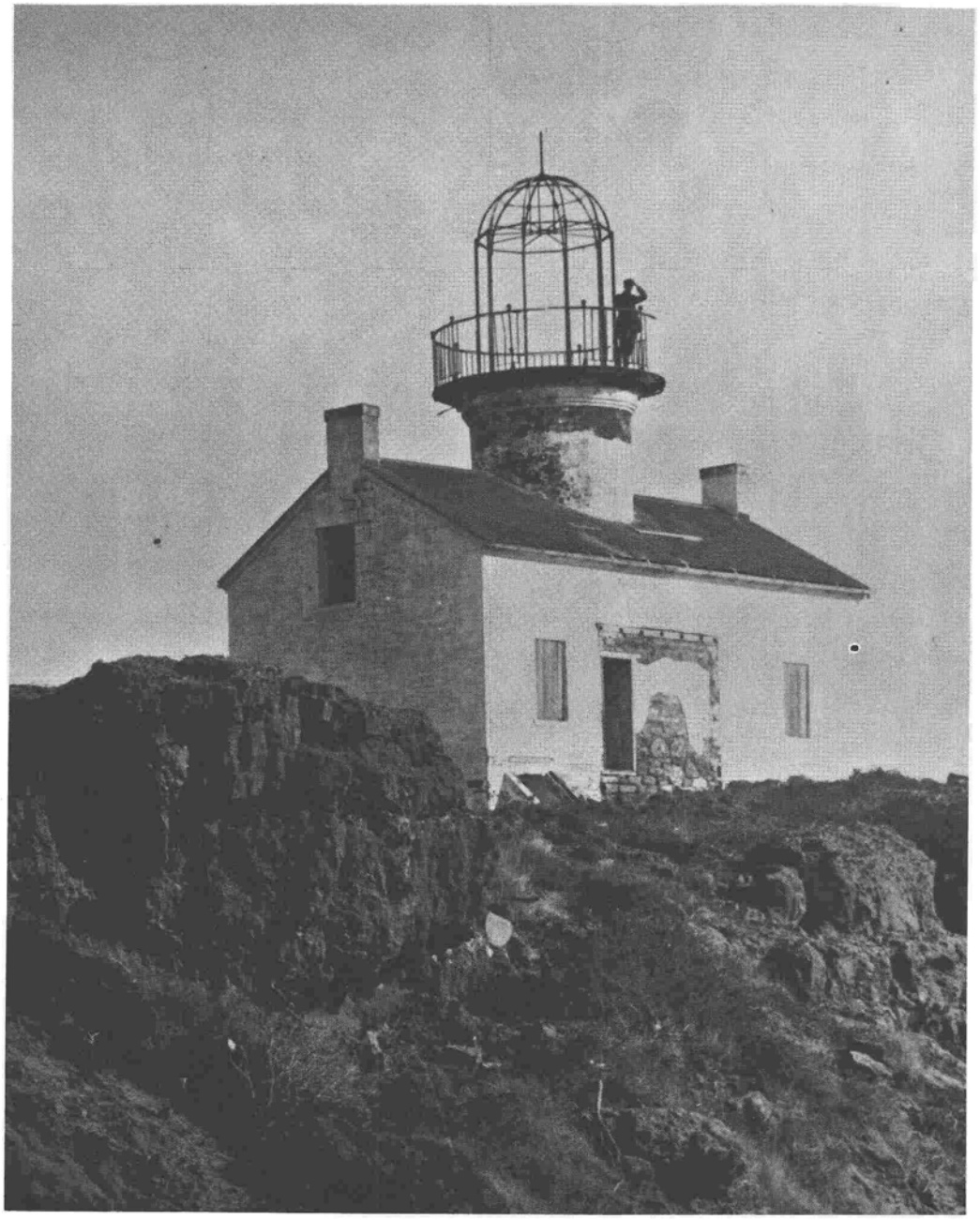
11. "Point Loma Notes," pp. 2, 3, 5; San Diego Herald, November 27, 1858; Hendricks, "Final Construction Report on The Lighthouse," pp. 4, 5.



ABANDONED POINT LOMA LIGHTHOUSE, ABOUT 1915. NOTE WHERE LEAN-TO HAD BEEN. From historical collection Title Insurance and Trust Company, San Diego, California

floor of the dwelling and a step was required to permit ease of access to the stone building. Plans further show that cabinets lined the west wall and were across the south wall except for directly under the window. That spot was occupied by a sink. Although not shown, it is probable that a handpump connected to the cistern in the basement and poured water into the sink when needed.

This lean-to is often referred to as the kitchen. Indeed, the foreman who supervised construction of the building in 1854 called it that. The plans refer to it as a porch. A copy of specifications dated in 1864 found in the Department of Navy library in Washington are almost an exact description of the Point Loma structure, and with but a few minor exceptions the specifications could have been used at Point Loma. In mentioning the lean-to the specifications called it a frame porch and said it was "to have a proper sink, shelves, &c, and an outside door, with proper steps, &c." The porch was "to be furred, lathed, and plastered, and finished in a decent manner." Therefore, despite the calling of the lean-to a porch, it was another room of the living quarters and was finished. The room, however, obviously contained no outlet for a cooking stove whereas the room it adjoined did have such an outlet; consequently, the lean-to, or porch, was probably used not only as a storage area but as a sub-kitchen where all activity connected with meals, except the actual cooking, was performed.

At the time of the 1935 restoration a sink was placed on the west wall. On each side of it counter space was provided with cabinets and drawers beneath. A floor-to-ceiling cabinet was placed in the northwest corner, and cabinets were built above the counters adjacent to the sink. The south wall was left

blank, except for the window, and over-head cabinets were placed along the east wall. The room was finished off in smooth plaster.[12]

c. Stone Dwelling

The dwelling has two chimneys, one at each end of the building. The south chimney served fireplaces on the first and attic floors, and the north chimney served at least one flue and possibly two. The north room on the first floor had a flue for the cookstove, and there may have been a flue in the basement; the evidence is not clear. At the time of the 1935 restoration the preliminary investigation revealed that the fireplaces "were of stone without lining. The inside face of flues, at the roof line had spalled off and the wood rafters adjacent were charred." In general, "The chimneys . . . were poorly constructed, and they were taken out." They were "replaced by new ones which followed detail for detail with the old ones." Fire clay flue linings were installed.

A general examination of the structure in 1934 showed that

> The first and second floors were framed with 3" x 8" joists with double flooring. The joists were in good condition and well anchored to the stone walls. The roof was framed with 3" x 6" rafters, sheathed on the lower side with T and G wood and on the exterior with 1" x 6" and 1" x 8" redwood boards laid 4" apart and covered with wood shingles. The roof covering was in poor condition and the rafters were badly eaten by termites.

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12. Hendricks, "Report on the Restoration of the Lighthouse," p. 6; Lighthouse Board, Specifications for a Third Order Lighthouse, Brick Tower, has the dwelling specifications bound with it.

The floor boards are of 1x5 T& G flooring in fair condition.

When removals were started in the second story the finish on walls and ceiling was 1" x 4" T and G. When this was removed, three thicknesses of wall paper were found over a layer of cheese cloth. Under the cheese cloth was redwood sheathing of 1" x 8" and 1" x 10" widths. When this was removed the marks of furring and wood lath were plainly visible in the stone and rafters.

In addition, when the old plaster was stripped off in other rooms old nailing strips and nailing blocks for lath were found. Some of the blocks were charred, "showing that there had been past fires in the building."

After the building had been stripped of its worn or non-original material, restoration began. The guiding thought was that the finished product was to be "as near the original as possible and still function safely as an observation building, which would be visited by thousands of people annually, rather than occupied by only a lighthouse keeper and his family." Whether this guideline is a proper excuse for the questionable restoration which resulted will have to be judged by the reader.

Work began and

Floor joists thorughout the building were left intact because they jutted into the stone walls. Additional joists were put in alongside the old to strenghthen them and to carry the increased and additional dead and live loads. Both the new and old timbers were treated chemically

against the inroads of termites. A sub-flooring was put down and then an oak plank floor of four, six, and eight inch width put down by means of nails, screws, and plugs. The floor was machine sanded, treated with filler and shellac, and then waxed. Hardwood floors are placed throughout the building.

The roof rafters were . . . replaced with new ones of like size. New wall plates were also put in, and were embeded in cement.

All of the old nailing strips were left in, but were treated with zinc chloride and creosote as a preventative against termites. The rooms were metal lathed, furred, and plastered, the plaster having a finish as close as possible to the original plaster found in the building.

Just what the interior plaster finish was and especially the basis for determining the restored finishing is considerably in doubt when one considers that the examiner stated, "The only original plaster work was on the wall just back of the stair tower on the first floor and this had been given a finish at some later date."13 The finish that was applied to the interior of the lighthouse has a coarse texture like very rough sandpaper.

The woodwork was generally in bad shape from both time and vandals. It was reported that

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13. Johnson, "Report on Public Works Projects at Cabrillo National Monument," pp. 4, 5; Hendricks, "Final Construction Report on the Lighthouse," pp. 5, 6; W.G. Carnes, "Report of Inspection of Cabrillo National Monument, September 11, to 15, 1934," Edward A. Nickel, "Report to the Chief Architect on Public Works Projects at Cabrillo National Monument, California," p. 2. All cited items are in the files of Cabrillo National Monument.

> The wood work throughout was deeply and thoroughly covered with initials and various insignia. The old door jambs were of such detail that the huge screw did not hold, and hinges had been replaced at various heights.

Another inspector noted the terrible condition of the woodwork, especially mentioning that it was not of the original type. He was particularly concerned about the window sash which was of the four-pane variety and not 12-pane as had been the original. Another inspector stated that the door and window frames were original; the remainder was not. The details of the woodwork of the doors and windows are shown on the plans of the lighthouse; hence, it was not difficult for the 1935 restorers to come up with reasonably accurate duplicates of the original woodwork. The design they developed was reasonably good, but at the behest of Chief Forester John D. Coffman "All openings leading into the stair well, six in number, were constructed with kalamein jambs and kalamein doors [which were] installed as a protection against fire."

None of the original hardware survived except, according to one restorer, a rim lock which was placed on the basement door. Presumably the door referred to is the one which leads from the outside to the basement. Reportedly the hinges on this door are also original, and from their present appearance, one would judge them to be original. The rim lock on the basement door was replaced a number of years ago with a similar one taken from an old structure at Fort Rosecrans. Another restorer said that the only original hardware found was two cast iron hinges on the first floor, and they were in poor condition.

All the old material removed from the building including pieces of the woodwork, hardware, "old square, or cut

nails," samples of the plastering, old iron work, old tile, and a rusty handpump found in the cistern was, according to one of the restorers, stored in a radio building northeast of the lighthouse.[14] The items, unfortunately, in time disappeared and have been lost to posterity.

After completion of restoration work the lighthouse was painted throughout. The colors used are not known, but in 1964 the colors were battleship gray and cream, a legacy of the days when the monument was living off the scraps of the Navy. Electricity was also placed in the building and outlets were installed in every room.

There is written information which sheds some light on the interior of lighthouses and material used therein. Although none of the information goes back to the 1852-1854 period when the West Coast lighthouses were being built, it is all within two to ten years of the building of these lighthouses, and all of the items are specifications for dwellings or towers.

These items are:

(1) Specifications for Love Point Lighthouse, Chesapeake Bay, Maryland, (1858),

(2) Specifications for a First Order Lighthouse, (Brick Tower), (1861),

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14. James G. Langdon, "Report to the Chief Architect on Research and Investigation, Lighthouse, Cabrillo National Monument," p. 4; Carnes, "Report of Inspection of Cabrillo National Monument," p. 3; Hendricks, "Final Construction Report on the Lighthouse," pp. 4, 6; Johnson "Report on Public Works Projects at Cabrillo National Monument," p. 5.

(3) Specifications for an Iron Pile Lighthouse at the Southwest Pass of the Mouth of the Mississippi River, (1861),

(4) Specifications for a Dwelling for the Keepers of First Order Lights, (1862),

(5) Specifications for a Third Order Lighthouse, Brick Tower, (1864); (bound with it is a separate specification for a dwelling which lays out specifications closely matching the Point Loma structure).

For convenience and simplicity the above items will be mentioned by number in the following discussion concerning the interior of the lighthouse.

(1) Plaster Walls

Three of the above mentioned plaster walls, but one, Item (5), says simply, "all the building above the cellar, together with the porch, is to be furred, lathed, and plastered, and finished in a decent manner." The other two, although not wholly satisfactory are a little more specific. Item (2) says, "all the walls . . . to receive two coats of brown mortar, containing a suitable amount of hair, and one coat of white hard finish." Item (4) states, "all the walls and ceilings of the 1st and 2nd stories, including the passage to the tower, and the under side of stairway, to receive two (2) coats of brown hair mortar, and one (1) coat of white, hard finish."

(2) Floors

In speaking of the floor Item (1) states, "The first course of boards to be of yellow pine one (1) inch thick,

not more than five (5) inches wide, with close joints, tongued and grooved, dressed to an even surface, and well secured to the framing. . . . The second course of flooring boards . . . to be of yellow heart pine, one inch thick, not over four (4) inches wide, tongued, grooved, dressed, and arranged so as to break joints with the course beneath, to which it must be well secured." Item (2) says that the flooring boards were "to be of yellow heart pine, one inch thick, not over four inches wide, tongued, grooved, dressed, and well nailed to the joists." Item (3) states that the flooring was to be of "yellow-heart pine boards, one and one-eighth (1 1/8) inch thick, not over three and one-half (3 1/2) inches wide, tongued, grooved, dressed on the exposed side, and well nailed to the sleepers." Item (4) echoes, "The floors of the 1st and 2nd stories of the dwellings to be of yellow heart pine, mill dressed, one inch thick, not over 4 inches wide, tongued, grooved, blind-nailed down." And Item (5) says simply, "All floors to be laid double, the upper one of southern pine."

In the list of material lost when the bark Oriole went down with all the building material for lighthouses, there was not a single mention of oak wood. It was mentioned prominently that southern pine and heart of yellow pine for steps and flooring was aboard the ship. Since the builders said that they brought all material for the lighthouses with them except brick, stone, and lime for mortar, it would be apparent that the specifications for the eight lighthouses did not call for oak for flooring. One can be assured that just because the builders lost their ship and material for the last four lighthouses constructed, the Lighthouse Board did not relax its specifications one whit to permit substitution of more readily available material. Moreover, there is no indication in the reports of inspectors that the contractors substituted any material not called for in the specifications.

From all this one must conclude that the original floors in the lighthouse were pine, undoubtedly, heart of yellow pine.

(3) Window and Doors

The 1855 plans of the lighthouse show windows of 12 lights, and all written information refers to windows in the upper floors as having that number. The basement windows were smaller and had six lights, and the lights, according to Item (5) were to be "8 x 10 glass." Item (2) called for the windows to have double sets of sashes, cast iron weights, brass axle pullies, and copper wire sash cords. Item (1) called for the window glass "to be German, of extra thickness."

Item (1) said the closet doors would be "best sash stuff." Item (2) specified that the door frames would be of yellow pine, and the main entrance "door, frame and dressings to be of clear stuff, well fitted. . . ." Only one mentioned the cellar door and that was Item (4) which said the door was "to be made of hard pine 1 1/4 inches thick, tongued, grooved, dressed on both sides, and thoroughly secured to the battens on the underside. Each cellar door to be made in two folds, each fold secured with two pairs of galvanized iron strap hinges. . . ."

There is also information about the hardware on the doors. Item (1) said the "two principal sash doors will be hung with suitable brass butt hinges, and furnished with mortice locks and fixtures. The closet doors were to be hung with proper brass butt hinges and fastenings. Item (2) said passage doors were to have brass locks and bolts, the "Locks to have mineral knobs." Brass hooks and eyes were to be furnished to keep the doors open. The entrance door was to be hung with brass butt hinges and to have a "six inch mortice rebate lock, with

porcelain knobs." Item (4) stipulated that the inside doors have brass butt hinges. In addition the cellar doors were to have "strong brass fastenings. . . ."

The finish of the doors and woodwork is also mentioned in the specifications. Item (1) specified that "All the wood work on the interior of house except the doors and floors, to receive three coats of white zinc paint. In addition, the doors are to be grained in imitation of oak and have two coats of varnish." The interior of the brick tower was to have "three coats of white lead in oil, well laid on." Item (4) also said all doors were to be "grained in imitation of oak." Item (5) stipulated that "all wooden doors and window sashes to be grained in imitation of oak, (except where the wood is already oak,) and to have two coats of coachmaker's varnish."

(4) Cistern Tubing

On the exterior of many lighthouses tubing ran from the gutters to the cistern in the basement. Point Loma lighthouse was no exception and early pictures show tubing running diagonally across the south end of the dwelling and one running diagonally on the south side of the lean-to. There was also a tube running perpendicular to the ground on the southwest corner of the dwelling. By connections, all dumped rainwater into the basement cistern. Item (1) called for these conductors to be copper and two inches in diameter. On the other hand, Item (2) stipulated that the gutters be copper but the conductors were to be of "best 'three cross' tin" three inches in diameter. It also said that there was to be a pump to bring the water up and a wooden sink with piping to carry off the excess water. Item (5) said the cistern was to be

OLD POINT LOMA LIGHTHOUSE, ABOUT 1890. NOTE GROUNDS SURROUNDING LIGHT STATION. From historical collection Title Insurance and Trust Company, San Diego, California

"finished with proper pump and pipes leading to the sink" which was to be in the lean-to.[15]

C. Other Light Station Buildings

The development of the Point Loma Light Station reached its peak in 1883 when the rain catch basin and new cistern were completed. Buildings and other installations had been added over the years and many of them, judging from the records, just appeared.

The light station originally consisted of just the dwelling and the outhouse. The first mention of another building is in 1875 when the Lighthouse Board's annual report indicated that a portion of the woodhouse was to be fitted up "for the better accommodation of the keepers." The woodshed was probably built by the keepers without the initial sanction of the Board. It was described as having been built of "rough, unseasoned boarding," and was erected for convenience. In 1876 the barn was raised, and in 1883 the catch basin and a Douglass pump were installed at the cistern. A water tank or cistern was added in 1858. The San Diego Herald on November 27 of that year reported that "A gentleman, named Russell, arrived on the last steamer, having a contract to build a new water tank, and make other repairs and alterations at the lighthouse on Point Loma." A cistern at the south edge of the

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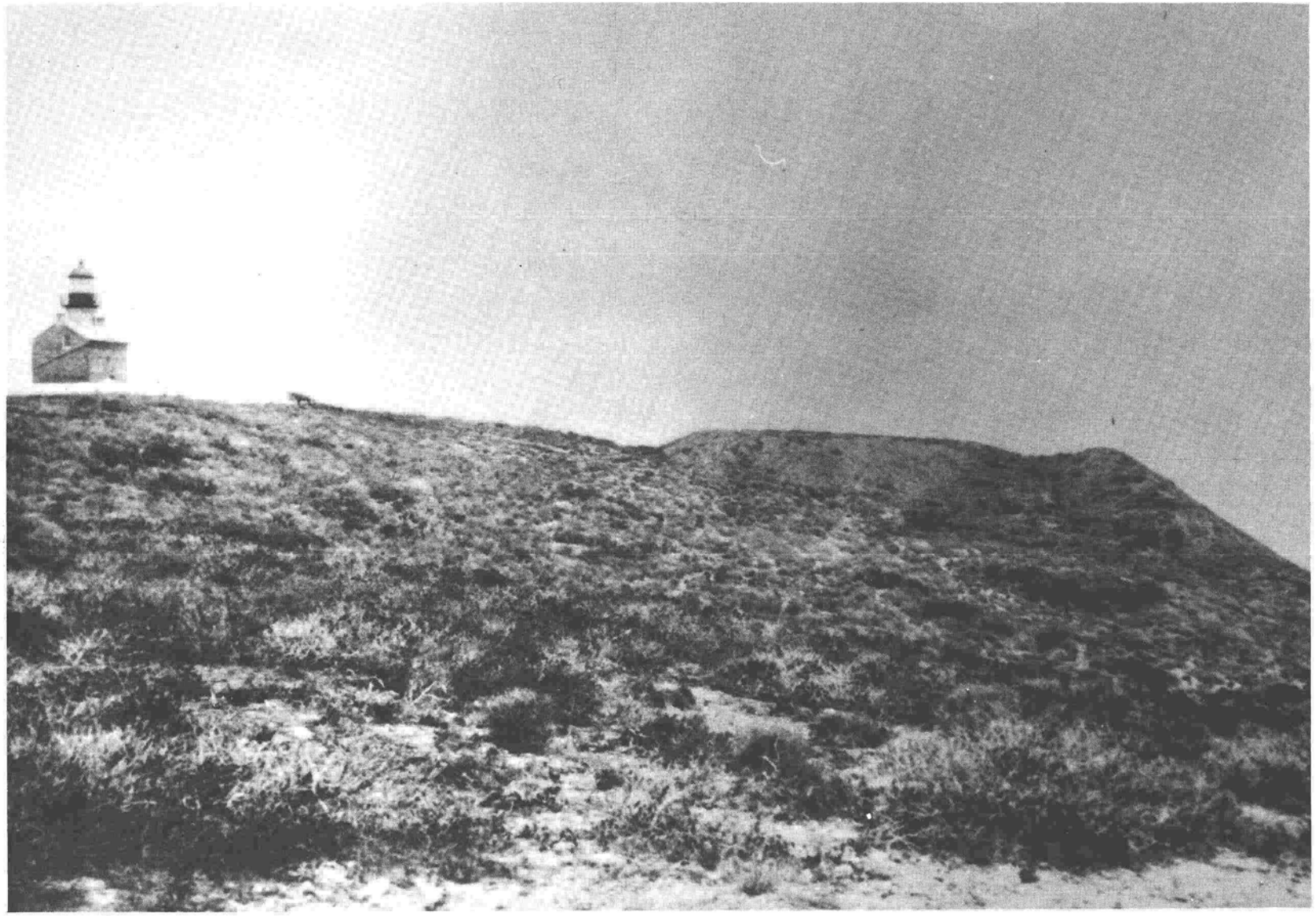
15. Lighthouse Board, Specifications for Love Point Lighthouse, Chesapeake Bay, Maryland (Washington: 1858), pp. 9, 10, 11; Lighthouse Board, Specifications for a First Order Light-house, (Brick Tower), (Washington: 1861). pp. 9, 10; Lighthouse Board, Specifications for an Iron Pile Light-house at the Southwest Pass of the Mouth of the Mississippi River, (Washington: 1861), p. 21; Lighthouse Board, Specifications for a Dwelling for the Keepers of First Order Lights, (Washington: 1862), pp. 7, 10; Lighthouse Board, Specifications for a Third Order Lighthouse, Brick Tower, (Washington: 1864), Dwelling Specifications, pp. 4, 5.



POINT LOMA LIGHTHOUSE, ABOUT 1870's. NOTE LANDSCAPING. From National Archives

catch basin must have been excavated prior to 1883. The earliest record of it is the 1881 drawing of the station layout. That it existed there is no doubt. As late as 1929 there is mention of the remains of two outside cisterns at the lighthouse. In 1881 the Board authorized the District Engineer to build a boathouse and storage shed at the water's edge to store the recently authorized boat. The shed was "for the safe keeping of supplies awaiting transportation to the Light Station.[16]

As can be seen in a number of historic photographs, the old light station had a flagpole standing near the lighthouse. Keeper Jenkins put up the pole sometime between 1867 and 1870, and used it to fly the flag on special State occasions. He was, according to the District Engineer, most proud of the pole and the flag.

The flagpole remained at the station. In 1888 the local Chamber of Commerce requested permission to establish at the lighthouse signals "that can be seen and acted on by pilots whenever there is a ship in sight." The Board gave a positive response to the request with the stipulation "that it be done without interference with [the keeper's] lighthouse duties."[17] Though not mentioned, the signals were probably hoisted on the flagpole.

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16. Point Loma Notes, pp. 3-5; San Diego Herald, November 27, 1858; San Diego Union, July 14, 1929. Hartman Bache to James P. Keating, Oct. 13, 1858, Letterbook, Treasury Dept., No. 9, July 2, 1858 to Nov. 16, 1858; Bache to Keating, Jan. 12, 1859, Letterbook, Treasury Dept., No. 10, Nov. 16, 1858 to March 17, 1859; F.U. Farquhar to R.S. Williamson, Washington, March 25, 1881, L.H. Bd., Letters to Engineers, 12th Dist., July 1, 1880-June 30, 1885, all in USCG, RG 26, NA.

17. R.S. Williamson to Maj. Elliot, San [Francisco], [Dec. 31, 1870], Letters received from Engineer, 12th & 13th District, July 1870-Jan. 1871; and James F. Gregory to W.H. Heuer, June 13, 1888, L.H. Bd., Letters to 12th Dist. Engineer, July 1, 1885-June 30, 1888, USCG, RG 26, NA.

IV. HISTORIC FURNISHING DATA

There is a notable paucity of information on the furniture used at the Point Loma lighthouse. Early visitors made no mention of the furnishings and practically no records were left by occupants. In the 1930s a lady who, as a young girl, had lived with the last keeper and his wife reported that the furnishings had been crude and sparse; indeed, she remembered no chairs, just rough benches. It is with some difficulty that one can accept the story that such primitive living conditions prevailed. The last keeper, Captain Israel, was a trained chair maker and, according to his grandson, kept the tools of his trade in a large box, and he had them while stationed at the lighthouse. Moreover, he made $1,000 a year as lightkeeper which was not too bad a salary in the nineteenth century. This income was supplemented by that of his wife's who for three years was assistant keeper. She later maintained a small souvenir shop in the south room on the first floor of the dwelling where she sold post cards and, apparently, pictures she made of shells collected along the shores of Point Loma. Certainly they could have afforded more than just rough benches.

One, however, is inclined to believe that the lighthouse was simply and somewhat sparsely furnished, but the extreme primitiveness is hard to accept. Since we have no idea, with the exception of a few items, just what was in the lighthouse and since there is practically no information on furnishings of other lighthouses, the Point Loma lighthouse should generally be furnished much like a typical nineteenth century lower middle class home with plain, simple, and utilitarian pieces.

Trying to locate pictures or sketches of the interior of lighthouses is a frustrating task. In examining the resources of the Library of Congress and several maritime museums on the Atlantic Coast the writer was able to locate only one picture of the

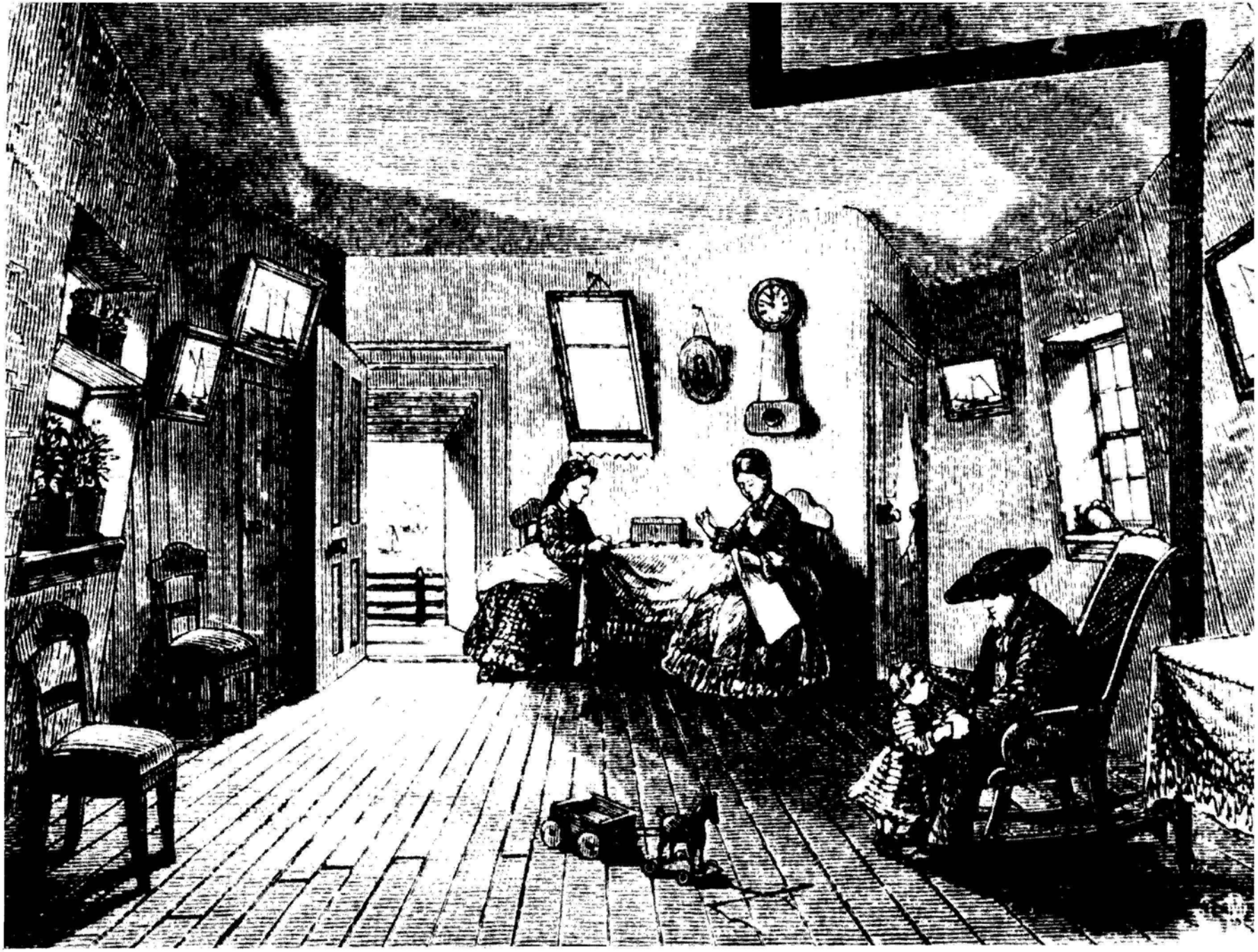
interior of a lighthouse, and that one had been printed in a nineteenth century children's magazine. The sketch was of an East Coast lighthouse. The picture indicates that the furnishings generally were what one would expect to find in any economically equivalent home of the period.

Verbal descriptions of the interior of lighthouses are almost equally scarce. The Colchester Reef lighthouse built in Lake Champlain in 1871, according to a recent writer, had an iron sink with pitcher pump in the kitchen. There were portable brass oil lamps "that were popular at the time" used for lighting the rooms at night. These lamps were supplied by the Lighthouse Board. In general, the keeper was expected to bring his own furnishings, including a coal stove to cook on.

A visitor to Minot's Ledge lighthouse in the early 1890s noted that the watch room, where the men also spent their leisure hours, was furnished with a stove, two chairs, and a high shallow desk. There was a spy-glass mounted on the lantern gallery. This was a man's lighthouse since the families of the keepers lived ashore.

Another visitor to the lighthouse, this time in New England, in the 1890s said that the walls of the lighthouse were decorated with a marriage certificate, an honorable discharge from the army, photographs of lighthouses, and brilliant marine lithographs.

A library case which the Lighthouse Board supplied could normally be found in lighthouses, at least by the late 1880s. About 50 volumes "of a proper admixture of historical, scientific, poetical, and good novels, together with a Bible and a prayer book" were arranged in cases which "make rather a neat appearance when set upright on a table, and they only need to be closed and locked to be ready for transportation." The library case was normally left at



INTERIOR OF EAST COAST LIGHTHOUSE IN 1880's

a light station about three months; it was usually exchanged at quarterly inspections.[1]

An item unquestionably in the Point Loma lighthouse was a stove for cooking purposes. In some of the early construction specifications for lighthouses it was stipulated that the builder provide "with complete fixtures, a cooking stove worth not less than $20." At the Colchester Reef lighthouse, however, it was expected that the keeper would provide a coal stove on which to cook. As at the Colchester Reef lighthouse, the Point Loma lighthouse keepers, it would seem, had to furnish their own stove. In the contract providing for the construction of the West Coast's first eight lighthouses no mention is made of the contractors providing cooking stoves; on the lists of material lost in the Oriole when it went down at the mouth of the Columbia River, stoves are not listed; and in the testimony about materials needed in construction of the lighthouses, no mention is made of stoves. For lack of any positive information we can assume that the keepers were expected to supply their own cook stoves.

What type of stove was used: coal or wood? It is difficult to say, at this time, whether the Lighthouse Board or the keeper supplied the stove for cooking purposes. No matter who, it is apparent the keepers in the early years of the Point Loma lighthouse had a coal stove, for at least 1874 the Lighthouse Board delivered annually to the Point Loma station four tons of coal and one cord of wood. In that year the keeper requested that the

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1. Gordon P. Manning, Life in the Colchester Reef Lighthouse (Shelburne, Vt.: 1958), pp. 5-6; Gustav Kobbe, "Life in a Lighthouse," Century Magazine. v. 47 (January 1894):372-373; Kirk Munroe, "From Light to Light." Scribner's Magazine, v. 20 (Jan. 1896):466; Arnold B. Johnson, The Modern Lighthouse Service, (Washington: 1890), p. 104.

CRACKS IN MASONRY TOWER WERE NOT VISIBLE AT TIME OF RECORDING, 10/77 DUE TO REPOINTING & PAINTING ACCOMPLISHED EARLIER THAT YEAR

DAMAGED FLASHING

HOLES IN RIDGE

4th ORDER LANTERN BASE

CRACKS IN CONCRETE FLOOR

CRACKS IN STANDING SEAMS & NUMEROUS HOLES WHERE NAILS ARE MISSING

HOLES IN COPPER

HOLES IN GUTTER

WARPED LOWER RAILS & STILES

FRAME WALL

MOISTURE DAMAGED PLASTER

STANDING WATER

CONDUIT CLAMPS CORRODED

ELEC. OUTLET CLOSE TO STANDING WATER

EXISTING WALL & CEILING PLASTER INSTALLED 1935

COPPER

APPROXIMATE LOCATION OF EXISTING CEILING VENTS

GLASS DOORS EXISTING

DOORS REMOVED 1968

DAMAGED PLASTER

Note: Concurrence for fire protection subject to recommendations stated in letter to Mr. White dated Feb. 29, 1968.

SOUTH ELEVATION

EAST ELEVATION

LANTERN PLAN

ROOF & TOWER PLAN

BASEMENT PLAN

FIRST FLOOR PLAN

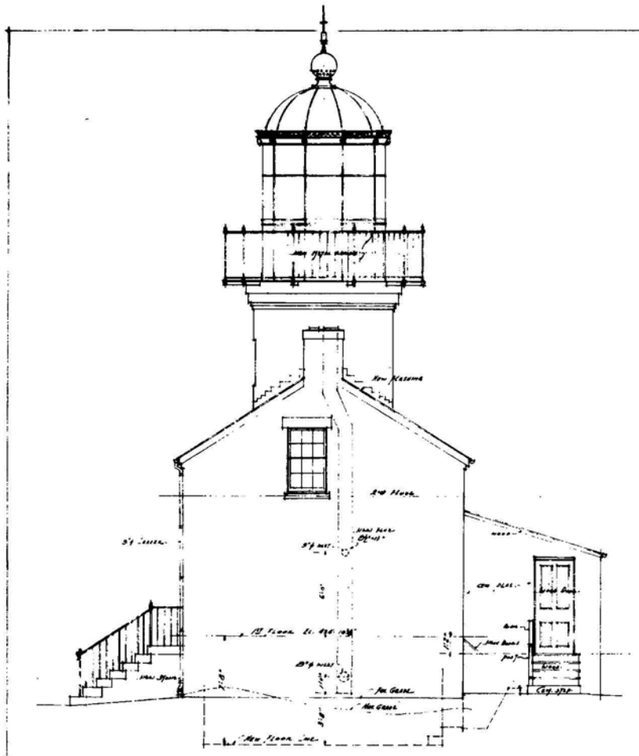
SECOND FLOOR PLAN

P.W. PROJ. F.P. 619.

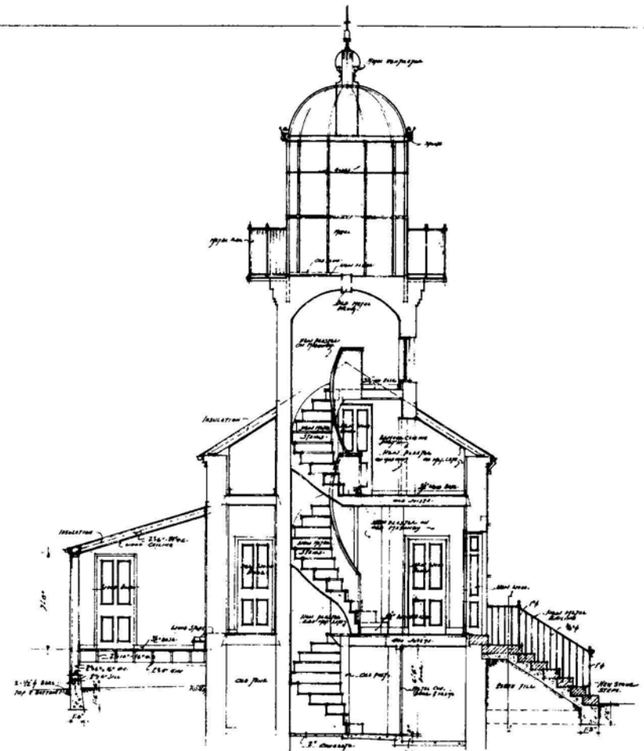
U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CADRILLO NATIONAL MONUMENT
REPAIRS TO LIGHTHOUSE
DRAWN BY BRANCH OF PLANS AND DESIGN

342/25000 1 of 10

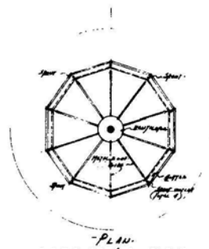
ON MICROFILM



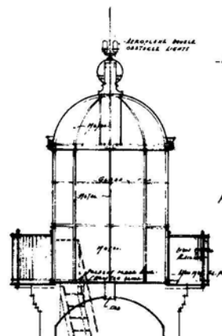
NORTH ELEVATION.

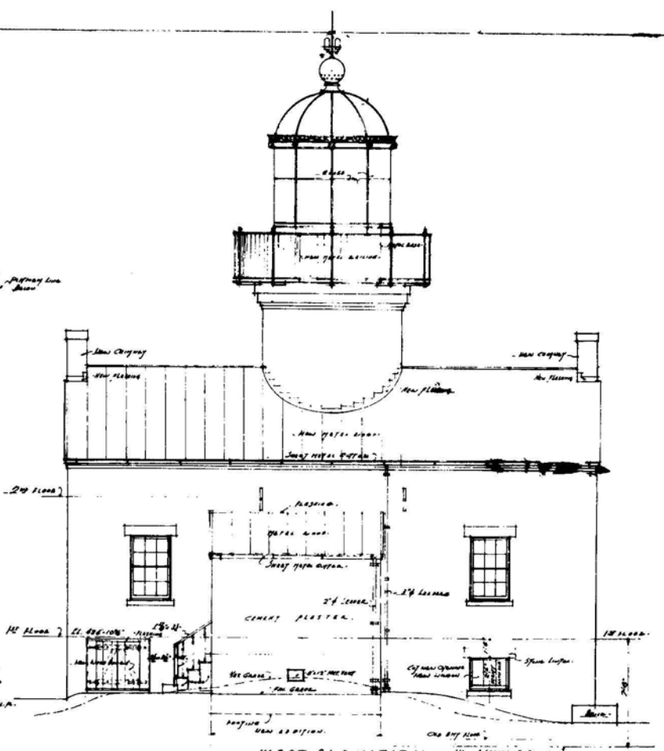


SECTION A-A



PLAN.
ROOF OF LANTERN





WEST ELEVATION -

SECTION B-B.
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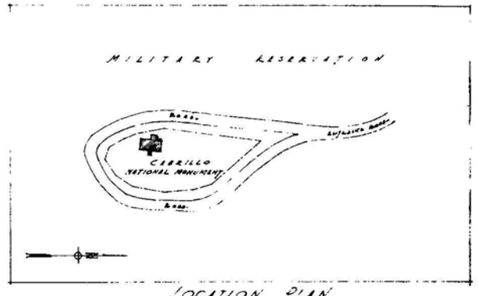
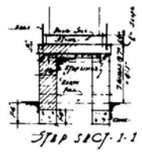
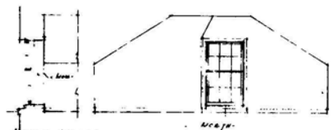


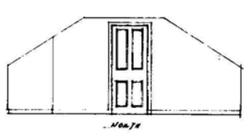
LOCATION PLAN
Scale 1"= 1mile



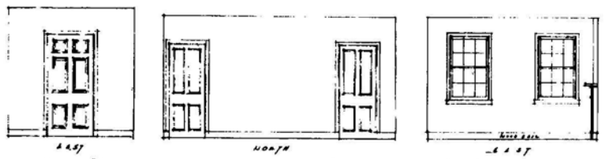
STAIR SECT. 1-1



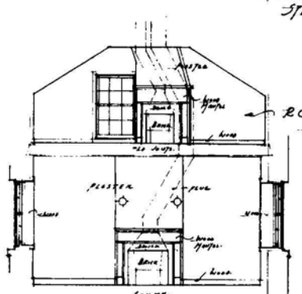
WINDOW SECTION
ROOM # 12



ROOM # 10
South Elevation on Room #12 is similar.



EAST
HALL #1
NORTH
ROOM # 3
EAST



South
ROOM #3
ROOM # 10
South

INTERIOR ELEVATIONS.
Scale 6"=1'-0"

Recommended:	[illegible]	Date 2-7-35	U.S. DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE CABRILLO NATIONAL MONUMENT REPAIRS TO LIGHTHOUSE DRAWN BY BRANCH OF PLANS AND DESIGN.
Cleared for Expenditure:	[illegible] Chief Engineer	Date 2-9-35	
Concurred:	See Note Sheet 1 [illegible]	Date 2-28-35	
Concurred:	[illegible]	Date 2-14-35	
Approved:	[illegible] Superintendent	Date 3/1/35	

P.W. PROJ. F.P. 619

Work Project Completed 12-26-35

57/190 Ref's 619-A-438

342/25000 2 of 10

2

ON MICROFILM

LOWER RAILS & STILES WARPED

ENTIRE ROOF STRUCTURE & WALLS WERE STRIPPED DOWN TO THE STONE & REPLASTERED IN 1935

EXISTING VENTS

FRONT ENTRY DETAILS

DETAILS OF ROOM #2 & BASEMENT ENTRIES

SIDE ELEVATION OF FIREPLACES

FLUE & FIREPLACE SECTION

INTER. DETAILS RM. 3 & RM. 10.

ROOM #10 (Souza)

ROOM #3 (Souza)

Public Works Project - Phys. Improv. - AR Leg.

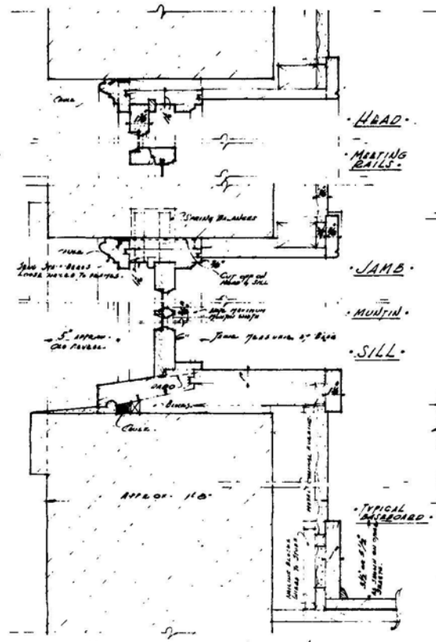
W. H. Caperton, Architect
Colorado
Chief Engineer

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CASTILLO NATIONAL MONUMENT
REPAIRS TO LIGHTHOUSE
DRAWN BY BRANCH OF PLANS AND DESIGN

57/190 Box 3 [illegible]

342/25000 3 of 10

GRI_MICROFILM



TYPICAL DOUBLE-HUNG WINDOW
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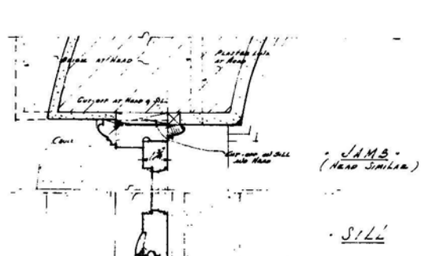

TOWER ROOM WINDOW
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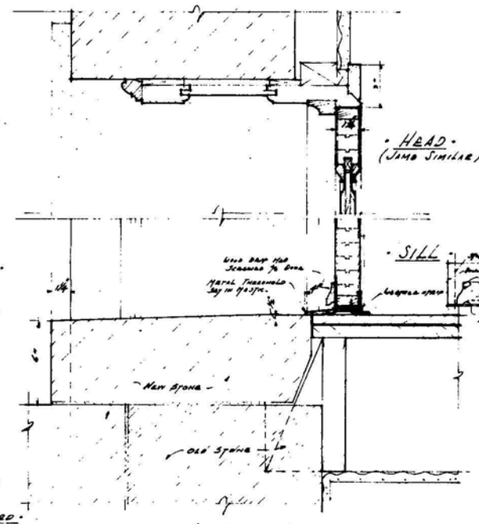

FRONT DOOR DETAIL
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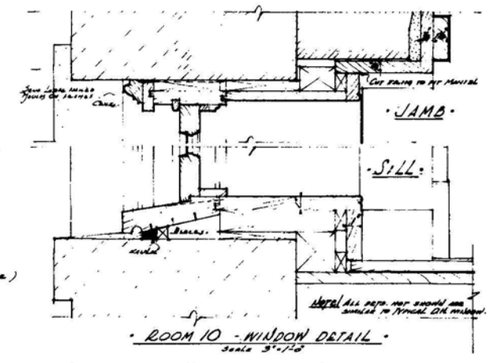
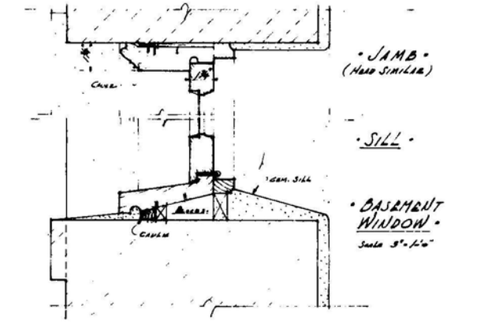


ROOM 10 - WINDOW DETAIL
Scale 3"=1'-0"



TYPICAL INTERIOR DOORS & FRAMES
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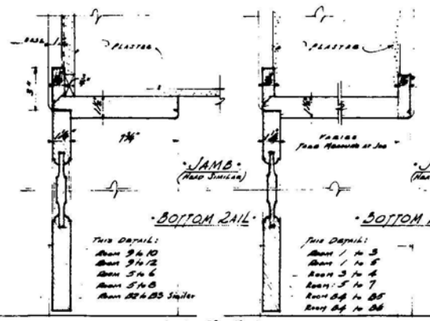
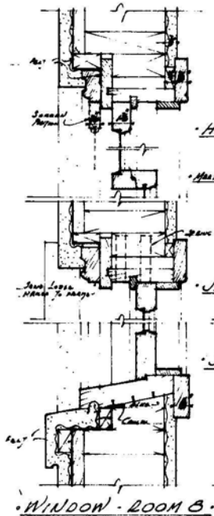
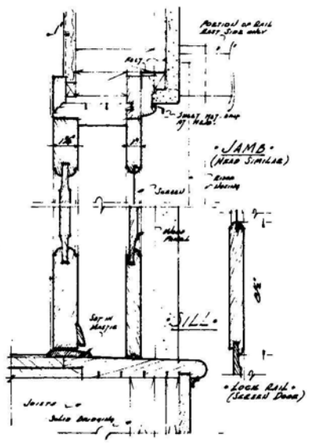
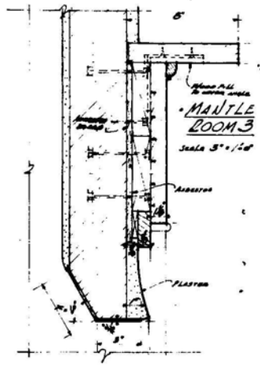


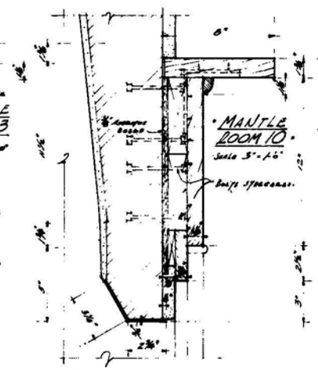


WINDOW - ROOM 8
Scale 3"=1'-0"

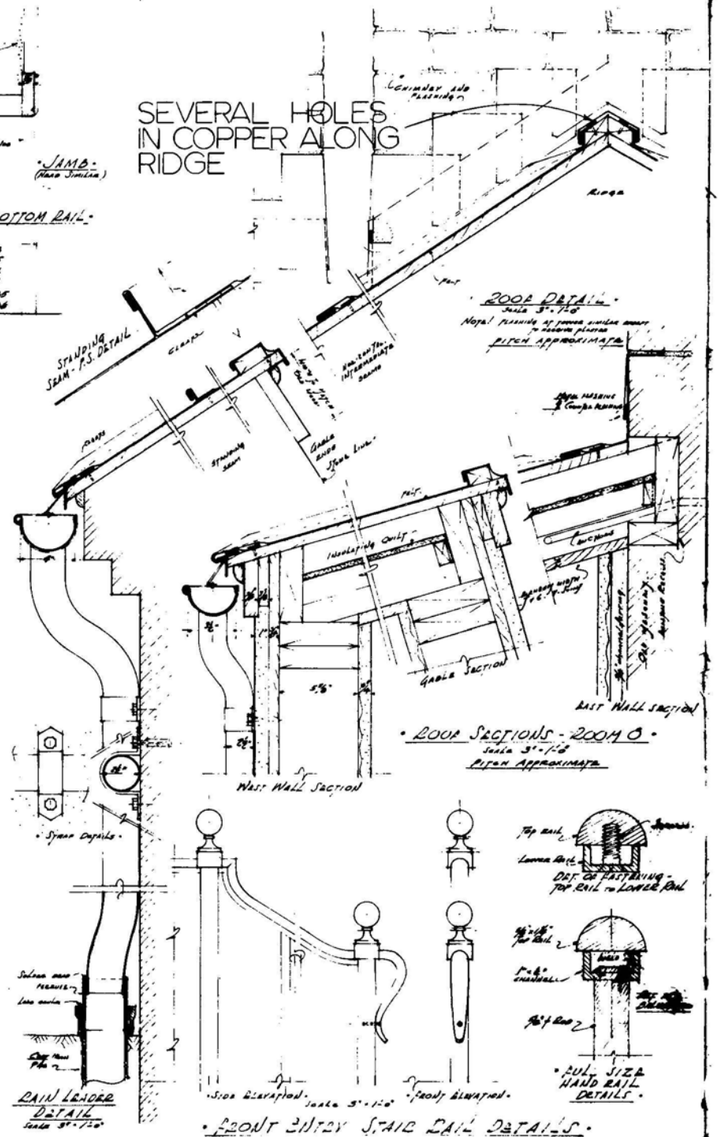


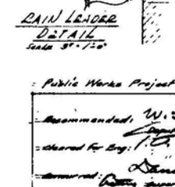
EXTERIOR DOOR - ROOM 8
Scale 3"=1'-0"





SEVERAL HOLES IN COPPER ALONG RIDGE





FRONT ENTRY STAIR RAIL DETAILS

Public Works Project - Mayo Impo. - P.R. 619

Recommended: W. G. Carnes, Supervising Architect — Date 3-9-35
Cleared for By: P. D. Rittenhouse, Chief Engineer — Date 3-6-35
Approved: Daniel Baker, Regional Director — Date 3-12-35
PWA Project Completed 12-26-35

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CASTILLO NATIONAL MONUMENT
REPAIRS TO LIGHTHOUSE
DRAWN BY BRANCH OF PLANS AND DESIGN

57/120 Box 369-A-1128

4

342/25000 4 of 10

ON MICROFILM

TOWER FLOOR PLAN
SCALE 3/4"=1'-0"

SECOND FLOOR PLAN
SCALE 3/4"=1'-0"

FIRST FLOOR PLAN
SCALE 3/4"=1'-0"

F.S. SECTION THRU. HAND RAIL

F.S. SECTION THRU. STAIR SOFFIT

F.S. PLAN OF T&G.

DETAIL E
SCALE 1½"=1'-0"

DETAIL G
SCALE 1½"=1'-0"

SECTION A-A
SCALE 3/4"=1'-0"

SECTION B-B
SCALE 3/4"=1'-0"

SECTION E-E
SCALE 3"=1'-0"

DEVELOPED SECTION THRU. STAIRS AT WALL STRINGER
SCALE 3"=1'-0"

SECTION-D-D

SECTION C-C
SCALE 3"=1'-0"

DEVELOPED SECTION THRU. STAIRS AT WELL STRINGER
SCALE 3"=1'-0"

ELEVATION OF NEWEL POST FIRST FLOOR

NOTE:
ALL DIMENSIONS TO BE VERIFIED AT THE BUILDING.

P.W. PROJ. F.P. 619

Recommended: W. G. Carnes, Deputy Chief Architect, Date 3-9-35
Cleared for by: [illegible], Chief Engineer, Date 3-5-35
Concurred: [illegible], Superintendent, Date 3-13-35

PWA Project Completed 12-26-35

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CABRILLO NATIONAL MONUMENT
REPAIRS TO LIGHTHOUSE
DRAWN BY BRANCH OF PLANS AND DESIGN.

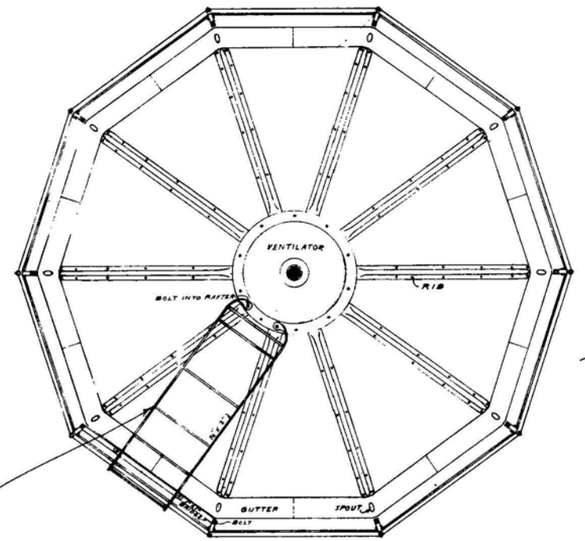
Date Jul 27 35

5

57/120 Accs 42-A-428

342/25000 5 of 10

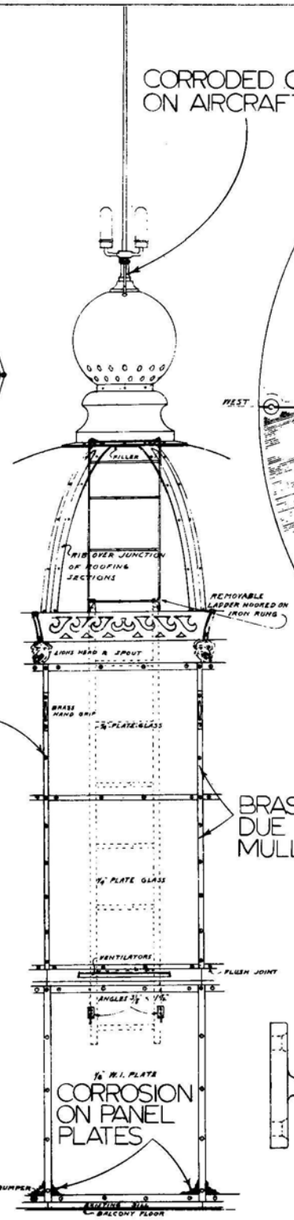
ON MICROFILM



ROOF PLAN
FIG. 9

CORRODED LADDER

CORRODED CONDUIT ON AIRCRAFT LIGHT



MANY SCREWS MISSING OR BROKEN OFF

CORROSION ON PANEL PLATES

ELEVATION OF ONE PANEL
FIG. 7

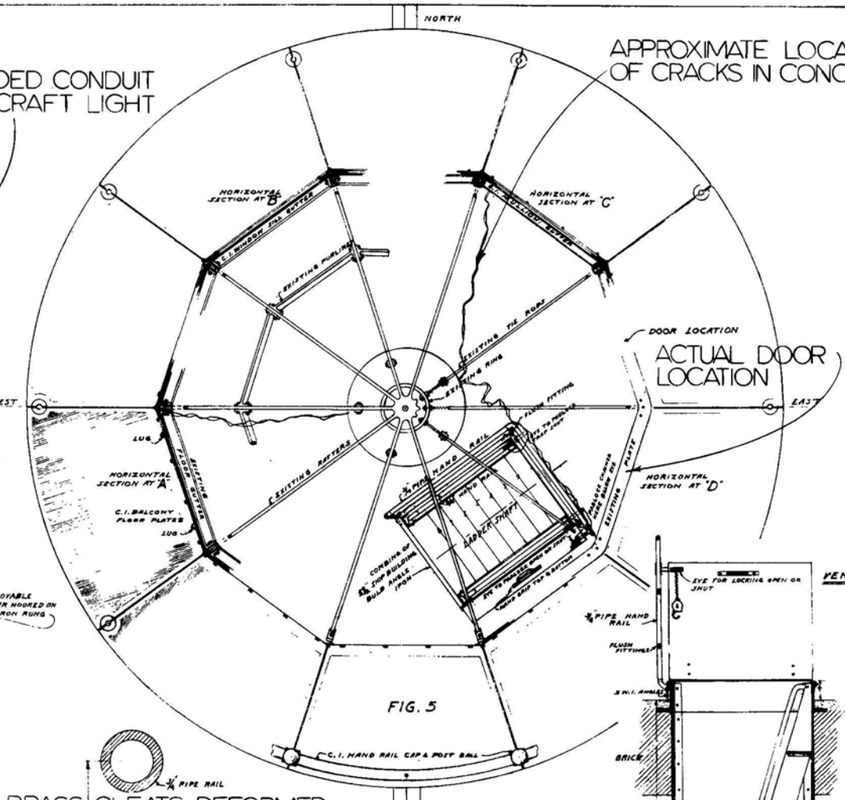
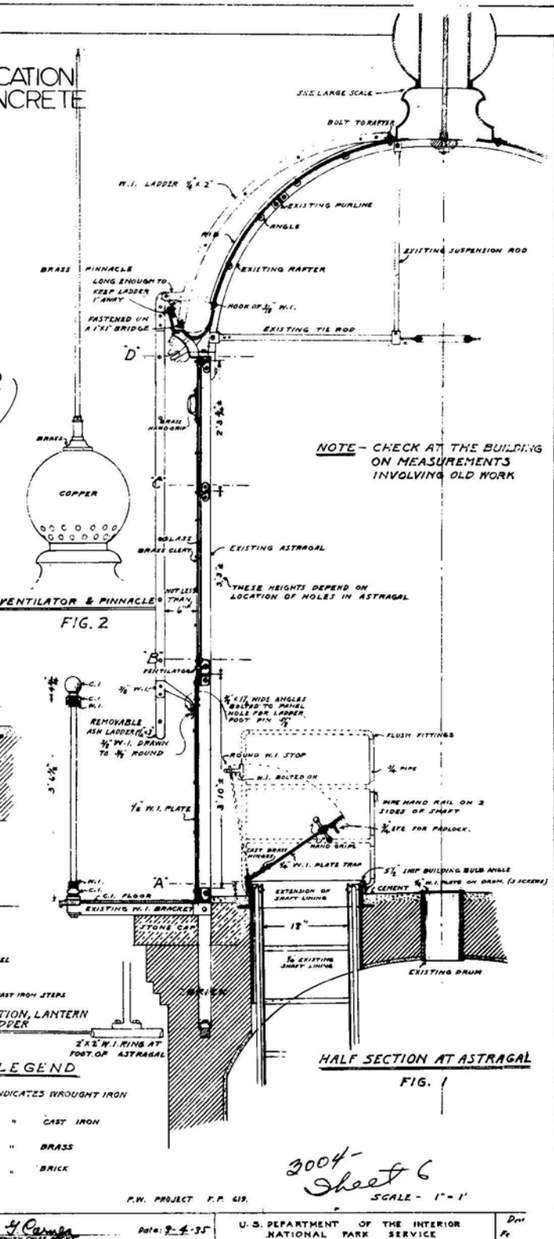


FIG. 5

APPROXIMATE LOCATION OF CRACKS IN CONCRETE



VENTILATOR & PINNACLE
FIG. 2

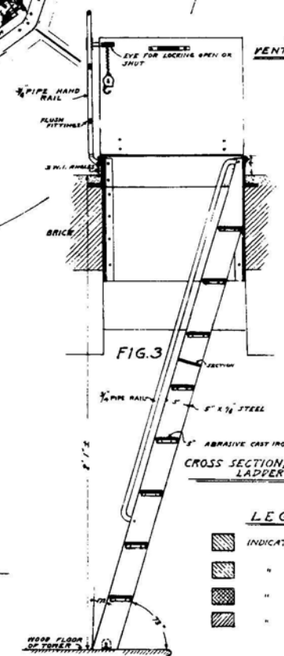
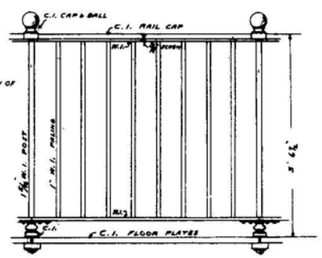
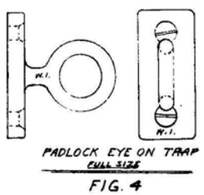


FIG. 3



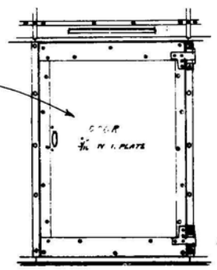
PANEL OF BALCONY RAIL
FIG. 6

DETAIL: LANTERN LADDER
FIG. 46



PADLOCK EYE ON TRAP
FULL SIZE
FIG. 4

HALF SECTION AT ASTRAGAL
FIG. 1



ELEVATION OF DOOR
FIG. 8

NOTE – THE 8 SHEETS OF LANTERN DETAILS ARE BASED ON MEASUREMENTS AT POINT LOMA, POINT PINOS, AND FROM INFORMATION FURNISHED BY THE LIGHT HOUSE SERVICE IN SAN FRANCISCO, CALIFORNIA.

NOTE – FOR FULL SIZE AND OTHER SCALE DETAILS SEE DRAWINGS Nº CAB. 3004 - 7, 8, 9 & 10. ALL BOLTS IN NEW PARTS TO BE SPACED TO FIT HOLES IN EXISTING PARTS.

3004-
Sheet 6
SCALE - 1" = 1'

P.W. PROJECT P.P. 619.

Recommended: W. H. Carnes, COUNTY CHIEF ENGINEER, Date: 9-4-35
Cleared for Eng. R. A. Kittredge, CHIEF ENGINEER, Date: 3-5-35
Concurred: Lamel Mohr, Acting SUPERINTENDENT, Date: 3-12-35

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CABRILLO NATIONAL MONUMENT
REPAIRS TO LIGHTHOUSE
DRAWN BY BRANCH OF PLANS AND DESIGN

PWA Project Completed 12-26-35

57/90 Dwg 3004-7

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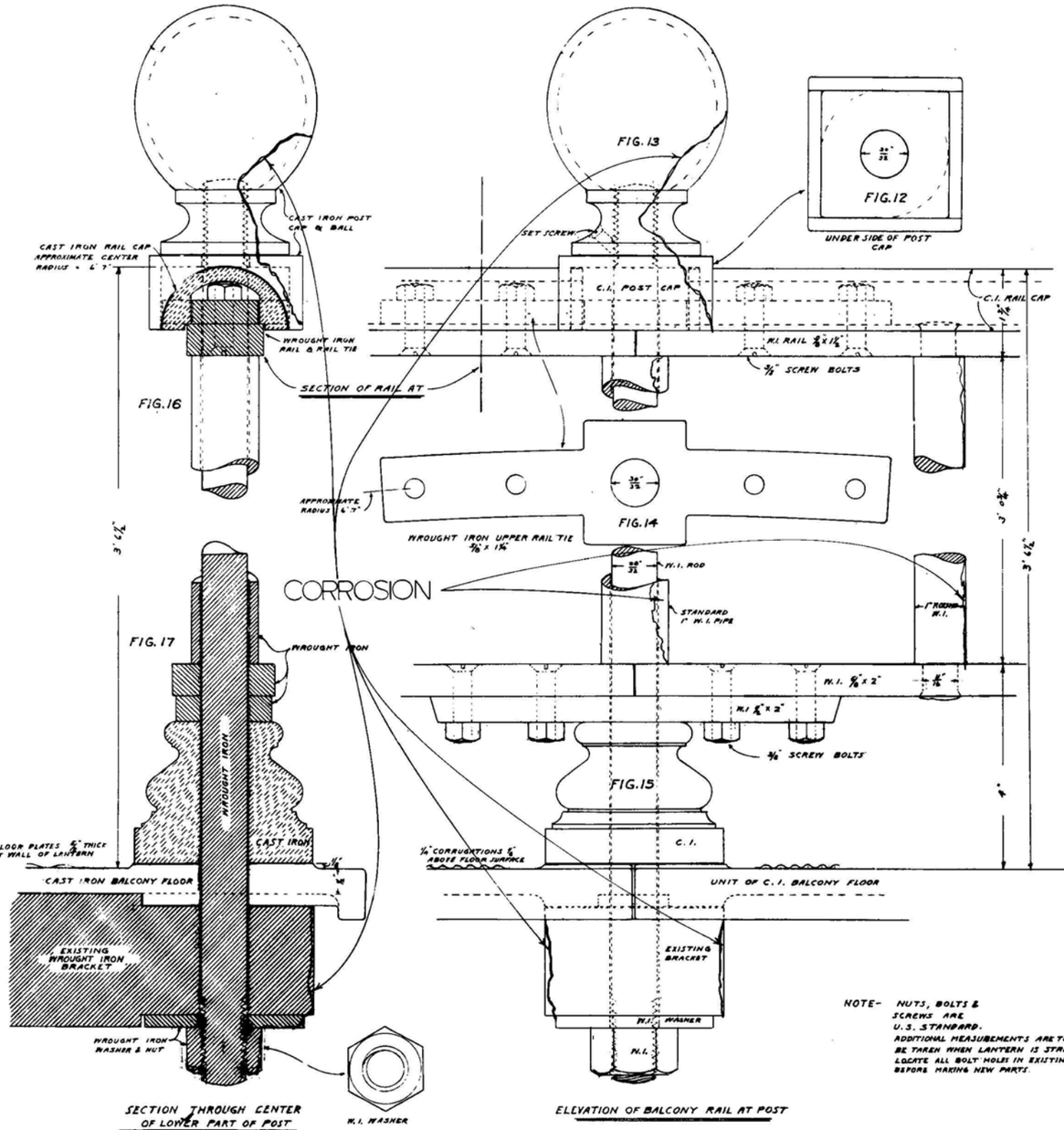
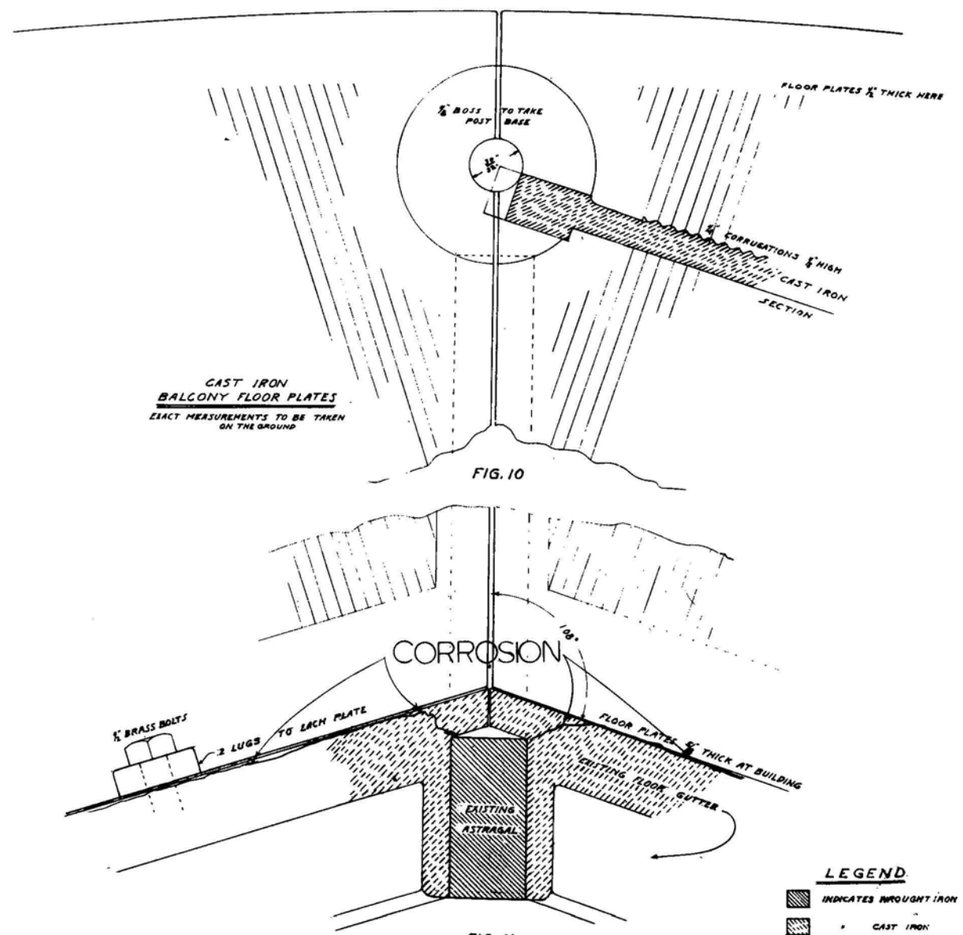
ON MICROFILM



NOTE- NUTS, BOLTS & SCREWS ARE U.S. STANDARD. ADDITIONAL MEASUBEMENTS ARE TO BE TAKEN WHEN LANTERN IS STRIPPED. LOCATE ALL BOLT HOLES IN EXISTING PARTS BEFORE MAKING NEW PARTS.



CAST IRON
BALCONY FLOOR PLATES
EXACT MEASUREMENTS TO BE TAKEN ON THE GROUND

LEGEND
- INDICATES WROUGHT IRON
- " CAST IRON
- " BRASS
- " BRICK

Sheet 7
NM-CAB-3004
SCALE - FULL SIZE

P.W. PROJECT F.P. 619.

Recommended: W. J. Carson, Supt. Casa Grande Sec. Date: 2-4-35
Cleared for Eng. F. A. Kittredge, Chief Engineer Date: 3-5-35
Concurred: Daniel Bolt, Acting Director of Investigations Date: 3-13-35

P.W. Project Completed 12-26-35

U. S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CABRILLO NATIONAL MONUMENT
REPAIRS TO LIGHTHOUSE
DRAWN BY BRANCH OF PLANS AND DESIGN

Da. Feb. 2... Supp. 5... 1/2 c...

Checked By [illegible] Approved for Issue [illegible]

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ON MICROFILM

ORIGINAL STYLE OF DOOR LOCK CASE, HOUSING A BRASS LOCK SIMILAR TO A CORBIN NO. 4512

FIG. 32

CAST BRASS

INSIDE BRASS KNOB

OUTSIDE BRASS KNOB

EDGE OF DOOR

FIG. 33

EXACT SIZE AND LOCATION OF OPENINGS TO BE TAKEN FROM THE LOCK USED

SIDE DOOR JAMB WIDENED TO FORM STRIKE PLATE

EXISTING

OUTSIDE OF DOOR

CAST BRASS HINGE WITH STEEL PIN

FIG. 22

FIG. 34

CROSS SECTION OF DOOR JAMB AT ASTRAGAL

FIG. 35

DETAILS OF DOOR LOCK & STRIKE PLATE

BALCONY FLOOR PLATE

LOWER DOOR HINGE

NOTE - ALL BOLTS IN NEW PARTS TO BE SPACED TO FIT HOLES IN EXISTING PARTS

DOOR & LOCK NOT CONSTRUCTED AS DRAWN

GLASS "B"

BRASS

LATCH (SHAPE OF THANK OF KNOB)

HOOD 1¾" LONG ON OUTSIDE

LATCH

MILLED HEAD

COPPER SCREEN. BRASS VENTILATOR SHUTTER

CAST IRON

BRASS

GUTTER CUT AWAY ON THIS LINE TO SHOW VENTILATOR

UPPER HINGE & CROSS-SECTION OF WINDOW-SILL-GUTTER

FIG. 20

BRASS

SNUG FIT

HINGE TO HAVE ONLY ENOUGH CLEARANCE ON PIN TO WORK FREELY

CROSS-SECTION OF ¾ WROUGHT IRON DOOR

EXISTING ASTRAGAL

FIG. 21

CAST BRASS DOOR JAMB

¾" M.I. ¾" M.I.

CAST BRASS HINGES

ELEVATION OF HINGE & CROSS-SECTION OF DOOR AT

LUG ON FLOOR PLATE

BRASS BOLTS

CAST IRON FLOOR PLATES

CROSS SECTION OF EXISTING CAST IRON GUTTER

LOWER DOOR HINGE & FLOOR GUTTER

KNOB MISSING ON TWO SHUTTERS

ONE SHUTTER MISSING SOME INOPERABLE

FIG. 19

STRIKE PLATE GROOVE ½" TO THE LEFT OF CENTER

INSIDE OF VENTILATOR OPENING

¾ HINGE PLATE. CAST BRASS.

SUNK PANEL

⅜" COUNTERSINK ON BACK TO SWING LATCH

CAST BRASS

TOP OF GUTTER LIP

STEEL PIN

INSIDE VIEW OF ONE HALF OF VENTILATOR IN WINDOW-SILL-GUTTER SECTIONS

EXISTING MULLION GUTTER INSTALLED UPSIDE-DOWN

GLASS

"C"

BAR BRASS

FIG. 24

CROSS-SECTION OF MULLION GUTTER AT "C"

EXISTING IRON DETERIORATED DUE TO CORROSION

GLASS

BAR BRASS

CAST BRASS

EXISTING WROUGHT IRON ASTRAGAL

FIG. 25

CROSS-SECTION OF EXISTING ASTRAGAL AT "C"

BAR BRASS

NOTE - UNLESS OTHERWISE NOTED ALL OF THE MACHINE BOLTS AND SCREWS FASTENING BRASS CLEATS ARE OF BRASS

THESE TWO CLEATS ARE FLUSH WITH SURFACE OF OUTSIDE OF WINDOW SILL GUTTER SECTION

FIG. 18

OUTSIDE VIEW OF WINDOW-SILL-GUTTER SECTIONS AT CORNER

GLASS

BAR BRASS

CAST BRASS

EXISTING WROUGHT IRON ASTRAGAL

SUPPLEMENTARY ELEVATION JUST BELOW "B"

FIG. 27

LOCATION OF SECTION "B" ON ELEVATION

FIG. 26

BRASS CLEATS DEFORMING DUE TO CORRODED MULLIONS

CROSS-SECTION OF EXISTING ASTRAGAL AT "B"

FIG. 30

RUBBER PLUG

BRASS DOOR BUMPER TO BE PLACED HERE

PLAN OF HINGE & CROSS-SECTION OF DOOR AT

WROUGHT IRON PANEL

EXISTING WROUGHT IRON ASTRAGAL

CAST BRASS HINGES

¾" WROUGHT IRON

FIG. 23

SOME BOLTS MISSING

FIG. 28

½ WROUGHT IRON

CORROSION

"A"

BAR BRASS

LUG ON FLOOR PLATE

BRASS BOLTS

EXISTING GUTTER

SECTION OF EXISTING FLOOR GUTTER & NEW WROUGHT IRON PANEL AT "A"

CROSS-SECTION OF EXISTING ASTRAGAL & NEW PANELS AT "A"

BAR BRASS

EXISTING WROUGHT IRON ASTRAGAL

FIG. 29

LEGEND

INDICATES: WROUGHT IRON

" CAST IRON

" BRASS

" BRICK

CAST BRASS

FIG. 31

12 HAND GRIPS

SECTION

P.W. PROJECT. F.P. 619

Sheet 8

NM-CM.B-3004

SCALE - FULL SCALE

Recommended: W. J. Oliver, Supt. Date: 3-4-35

Cleared for Eng. F.G. Kittredge, Date: 3-5-35

Concurred: Date: 3-12-35

P.W.A. Project Completed 12-30-35

U. S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CASTILLO NATIONAL MONUMENT
REPAIRS TO LIGHTHOUSE
DRAWN BY BRANCH OF PLANS AND DESIGN

Date: Feb. 27, 1935

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8

ON MICROFILM

RIB COVERING JUNCTION OF ROOF SECTIONS

FOR CROSS SECTION SEE FIG. 42

UPTURNED EDGES OF ROOF SECTIONS

COPPER RIB

ANGLE

EXISTING WROUGHT IRON RAFTER

4" NICK COPPER BATTEN COVERING JUNCTION OF ROOF SECTIONS AT GUTTER

PEAK OF GUTTER BETWEEN SPOUTS

SOLDER

CAST IRON

10 LION HEADS OF CAST BRASS

CAST BRASS

W.I. BAR TO STRENGTHEN CORNICE

EXISTING W.I. ASTRAGAL

SECTION THROUGH ASTRAGAL AND CORNICE BRACKETS

FIG. 41

PLAN OF TOP MEMBER OF UPPER CORNICE FRAME

FIG. 40

UPPER CORNICE DETERIORATED DUE TO CORROSION

WROUGHT IRON

CAST IRON

BAR BRASS

COPPER

CROSS SECTION AT

NOTE— BRIDGE TWO OF THESE POINTS WITH A 1"x1" BAR TO SUPPORT FOOT OF LADDER TO PEAK. PEAK LADDER SHOULD HAVE 6 RUNGS.

WROUGHT IRON

CAST IRON

OPENING FOR SPOUT

FRONT VIEW

FIG. 38

ELEVATION OF UPPER & LOWER CORNICE BRACKETS

EXISTING PLATE

WROUGHT IRON

WROUGHT IRON

SEE NOTE

EXISTING W.I. RAFTER

CAST IRON

PLAN OF LOWER CORNICE BRACKET

FIG. 39

BRASS BOLTS

ANGLE

CROSS SECTION OF COPPER ROOF RIB

FIG. 42

#10 GAUGE COPPER

SOLDER

#10 GAUGE COPPER

EXISTING RAFTER

SOLDER

GLASS

EXISTING PLATE & EXISTING WROUGHT IRON ASTRAGAL

CROSS SECTION OF CORNICE BETWEEN ASTRAGALS

FIG. 37

ONE CLEAT MISSING AT CORNICE

COPPER

BAR BRASS

COPPER

OPENING FOR SPOUT

APPROX. LOCATION OF LIONS HEAD FASTENED IN PLACE FROM THE INSIDE

BAR BRASS CLEATS

GLASS

GLASS

NOTE— ALL BOLTS IN NEW PARTS TO BE SPACED TO FIT HOLES IN EXISTING PARTS.

LEGEND

INDICATES WROUGHT IRON

" CAST IRON

" BRASS

" BRICK

FRONT ELEVATION OF CORNICE

FIG. 36

SEE ALSO FIG. 42.

F.W. PROJECT: F.P. 619. SCALE— FULL SIZE

Recommended: W. E. Colvocoresses, Supervising Civil Engineer. Date: 2-6-35

Chief of Div. Eng. T. D. Kelley. Date: 2-5-35

Concurred: Director. Date: 3-13-35

F.W.A. Project Completed 12-12-35

U. S. DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

CABRILLO NATIONAL MONUMENT

REPAIRS TO LIGHTHOUSE

DRAWN BY BRANCH OF PLANS AND DESIGN

Date: Feb. 21, 1935

Drawing No. 4

342/25000

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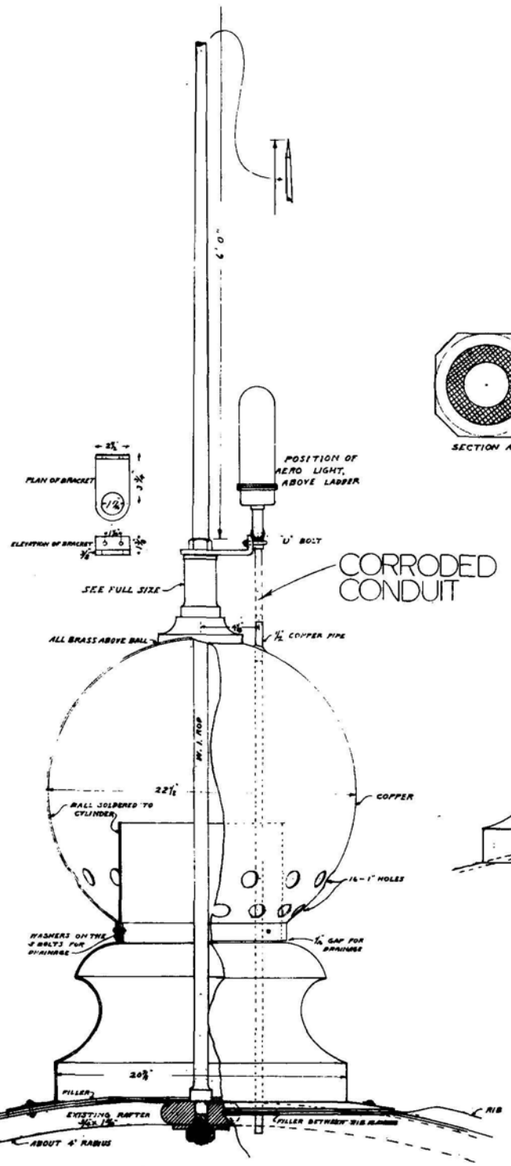
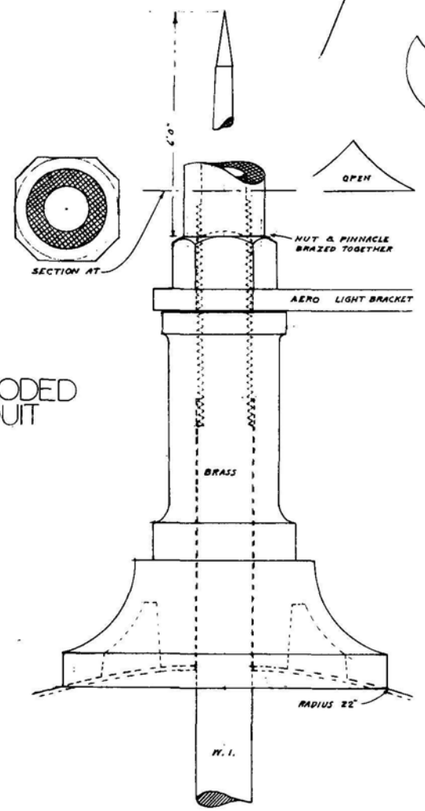
ON MICROFILM



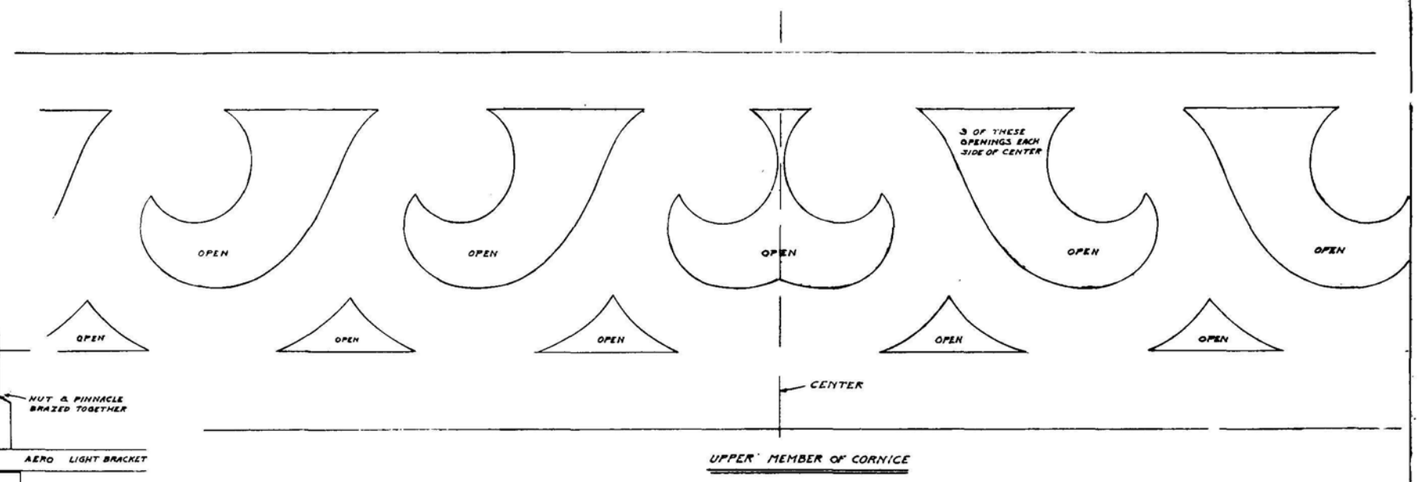
PEAK VENTILATOR ASSEMBLY
3" = 1'

FIG. 44



PINNACLE ASSEMBLY
FULL SIZE

FIG. 43



UPPER MEMBER OF CORNICE

FIG. 45
½ FULL SIZE

LEGEND

INDICATES WROUGHT IRON
" CAST IRON
" BRASS
" BRICK

NOTE-
ALL BOLTS IN NEW PARTS TO BE SPACED TO FIT HOLES IN EXISTING PARTS.

P.W. PROJECT: F.P. 419 SCALE- FULL SIZE & 3" TO 1'

Recommended: W. G. Carson, Chief Engineer	Date 3-4-35	U. S. DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE
Approved for Dirs. Fra Kittredge, Chief Engineer	Date 3-5-35	CABRILLO NATIONAL MONUMENT
Concurred: Conrad L. Wirth, Director	Date 3-13-35	REPAIRS TO LIGHTHOUSE
		DRAWN BY: BRANCH OF PLANS AND DESIGNS

P.W.A. Project Completed 12-19-35

Rec'd 1935 Engineer's Office, Yosemite Nat'l Park, Calif.
Prints 2 Rec'd 1935 — Yosemite Nat'l Park, Calif.

342/25000

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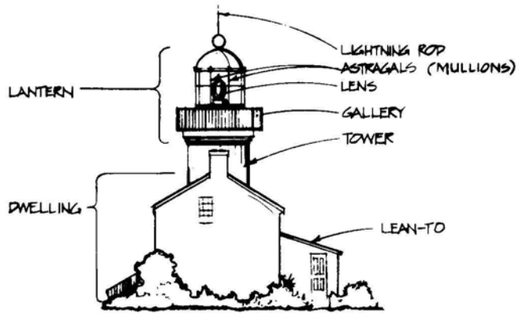
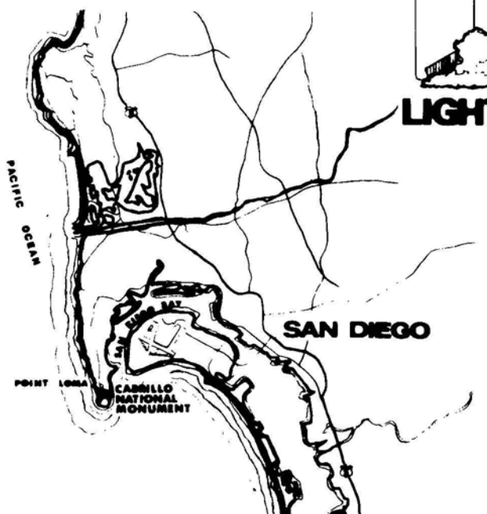
ON MICROFILM

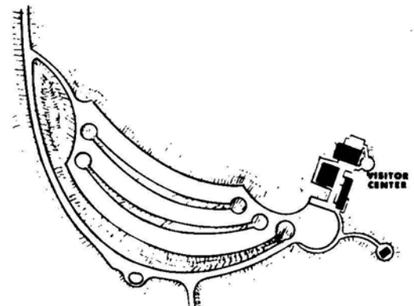
REGIONAL



LIGHTHOUSE NOMENCLATURE

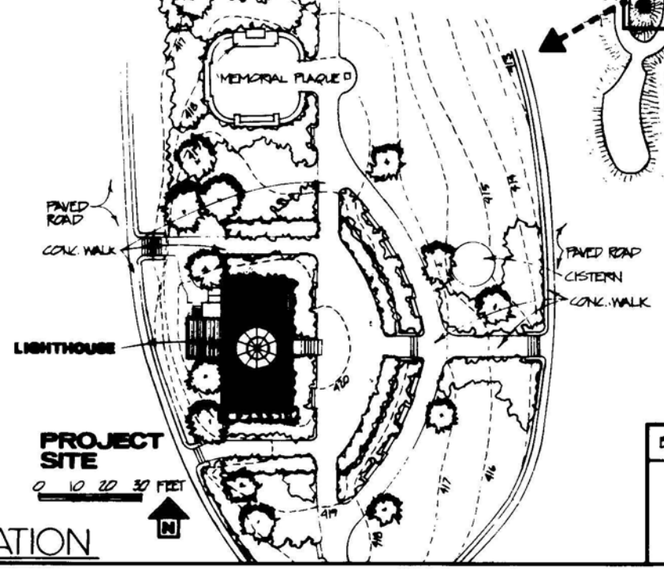


VICINITY



CABRILLO NATIONAL MONUMENT

OLD POINT LOMA LIGHTHOUSE



PROJECT SITE

SHEET INDEX

SHT. NUMBERS	WORK ITEMS
1	TITLE AND MAPS
2	TOWER STRUCTURE, ELEVATIONS & SECTION
3,4,5,6,7	LANTERN
8	ROOFING
9	BASEMENT & MISC
10	SECOND STORY ROOMS

METALS LEGEND

	CAST IRON
	STEEL
	WROUGHT IRON
	BRASS

GRAPHIC EQUIVALENT

0 1 2 3 4 5 6 INCHES

0 1 2 3 4 5 6 7 8 9 0 CENTIMETERS

ABBREVIATIONS

CONC.	CONCRETE	EA.	EACH
C. I.	CAST IRON	L. F.	LINEAR FEET
(E)	EXISTING		
ELEV.	ELEVATION		
(N)	NEW		
TYP.	TYPICAL		
W. I.	WROUGHT IRON		

NOTES

VERIFY ALL DIMENSIONS ON SITE BEFORE FABRICATION OF MATERIALS

0 100 200 FEET

SITE

HISTORIC STRUCTURE REPORT

PROPOSED TREATMENT

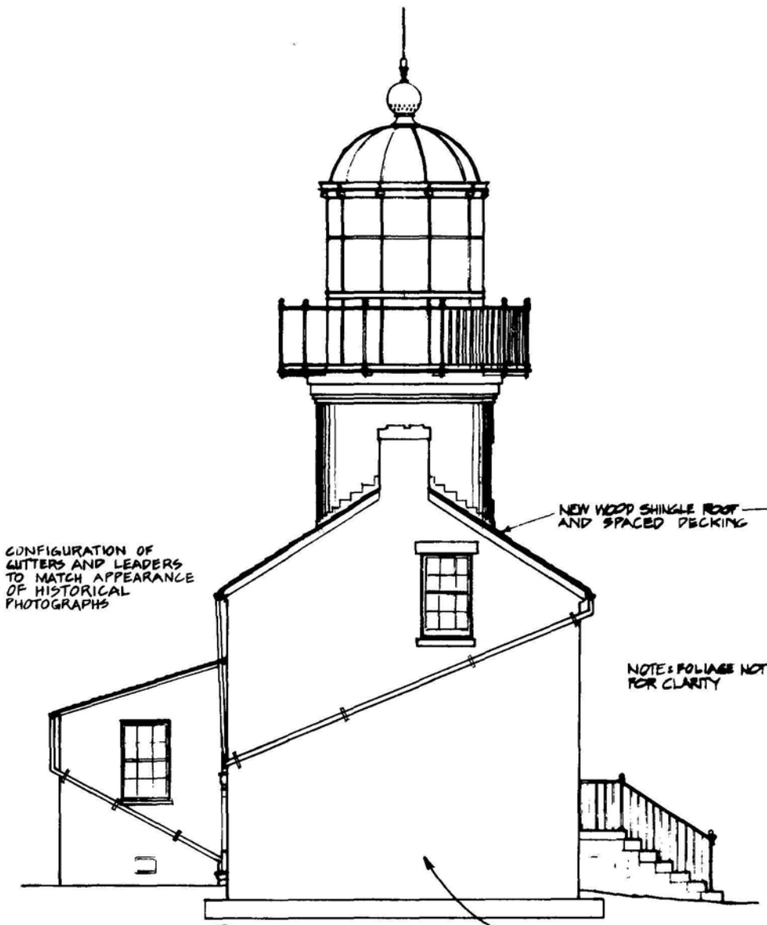
ON MICROFILM

BASIC DATA

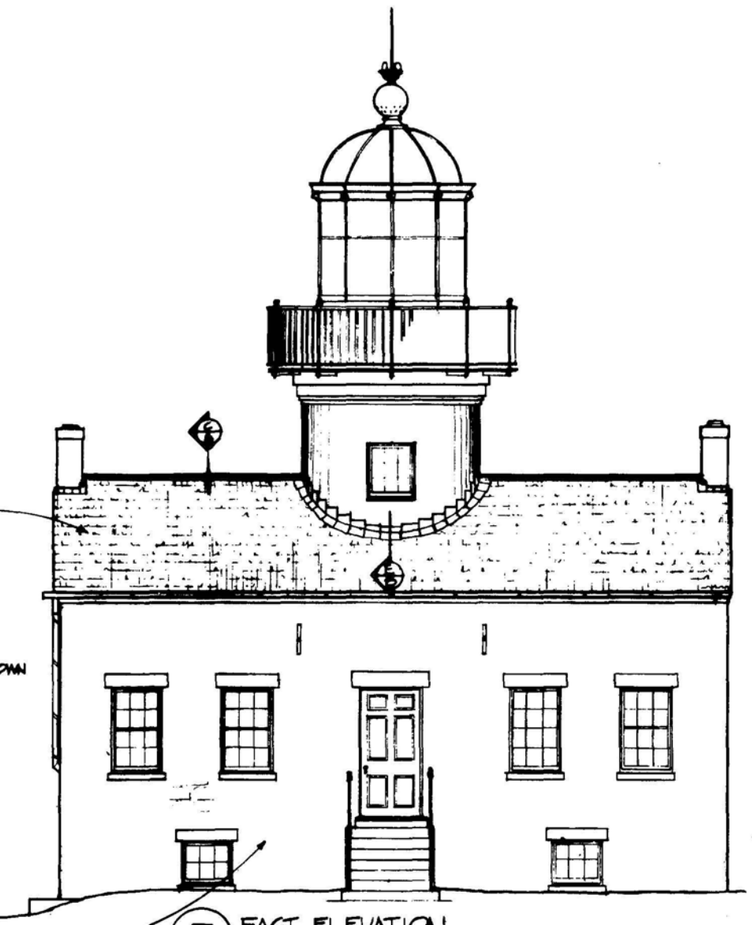
OLD POINT LOMA LIGHTHOUSE • PRESERVATION

BRANCH OF HISTORIC PRESERVATION UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE DENVER SERVICE CENTER	PREPARED H. LAW DESIGNED SNOW/LAW DRAWN R. CARPER CHECKED 2/1/80 DATE	TITLE OF DRAWING OLD POINT LOMA LIGHTHOUSE PRESERVATION LOCATION WITHIN PARK HISTORIC LIGHTHOUSE NAME OF PARK CABRILLO NATIONAL MONUMENT WESTERN REGION · SAN DIEGO COUNTY · CALIFORNIA STATE	DRAWING NO. 342 28,000 A PKG. NO. 123 SHEET OF 10

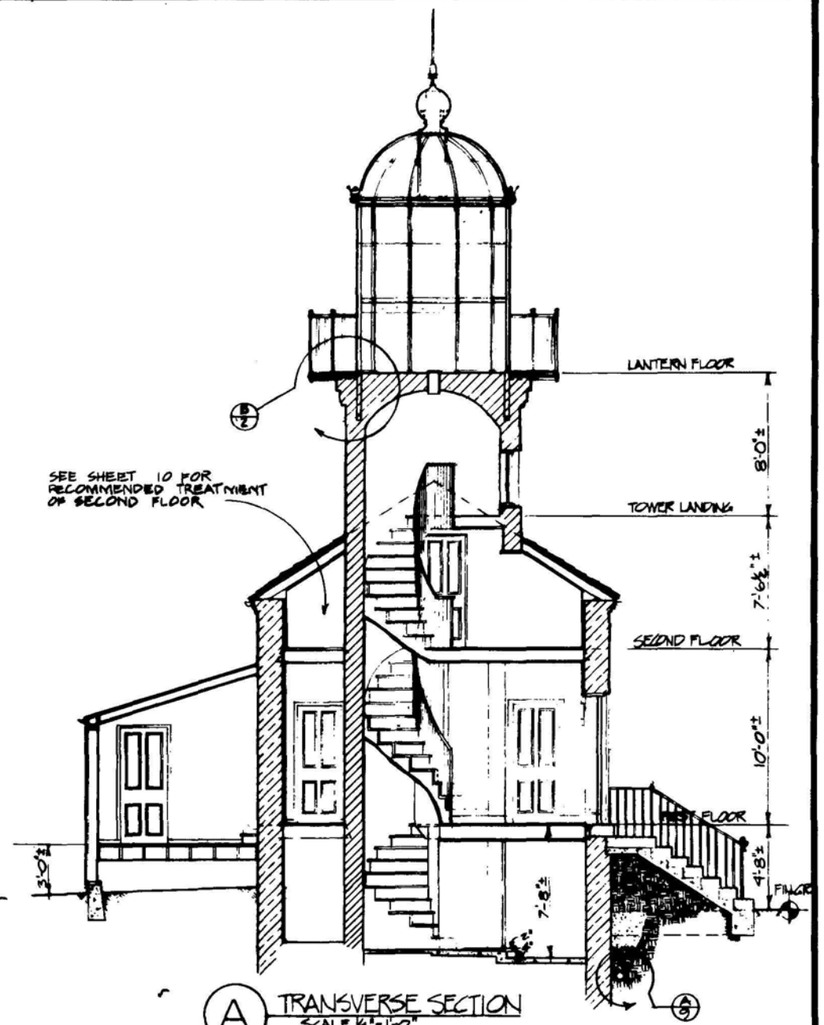
GPO 1974-678-711



C SOUTH ELEVATION
SCALE 1/4"=1'-0"

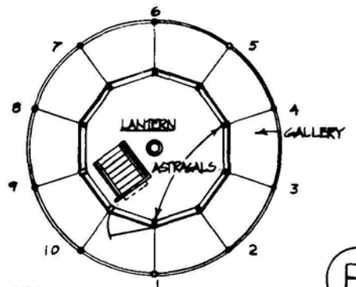


F EAST ELEVATION
SCALE 1/4"=1'-0"



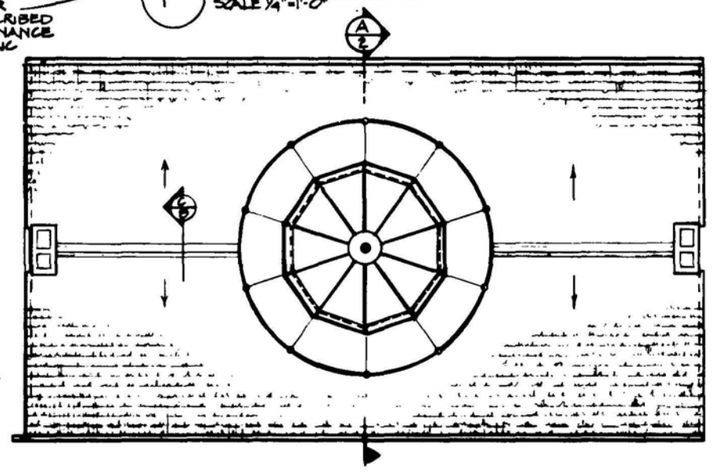
A TRANSVERSE SECTION
SCALE 1/4"=1'-0"

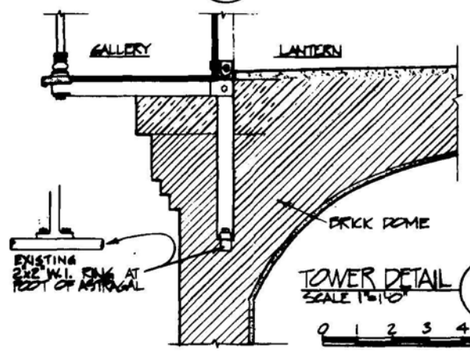
0 5 10 15 FEET



D LANTERN PLAN
SCALE 1/4"=1'-0"

E ROOF PLAN
SCALE 1/4"=1'-0"





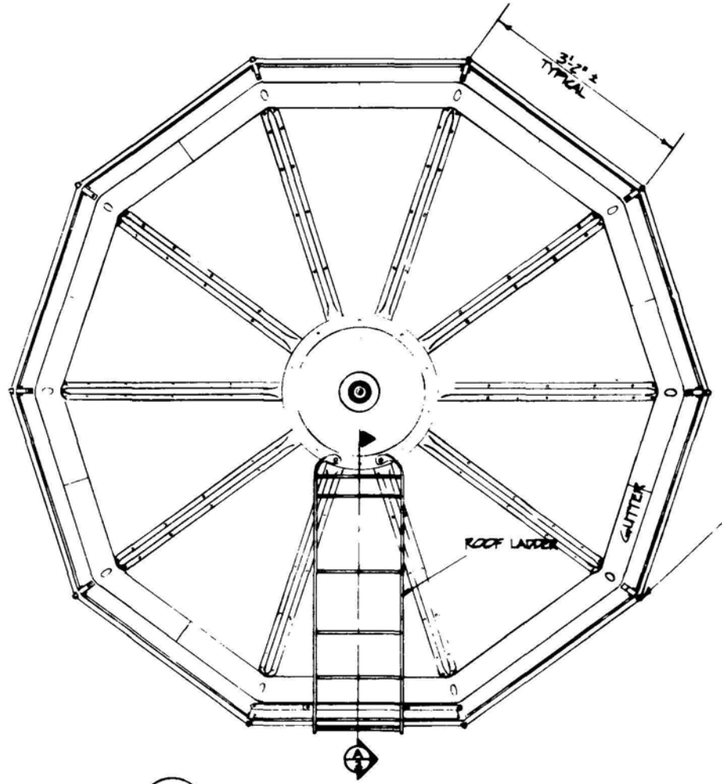
B TOWER DETAIL
SCALE 1"=1'-0"

0 1 2 3 4 5 6 FEET

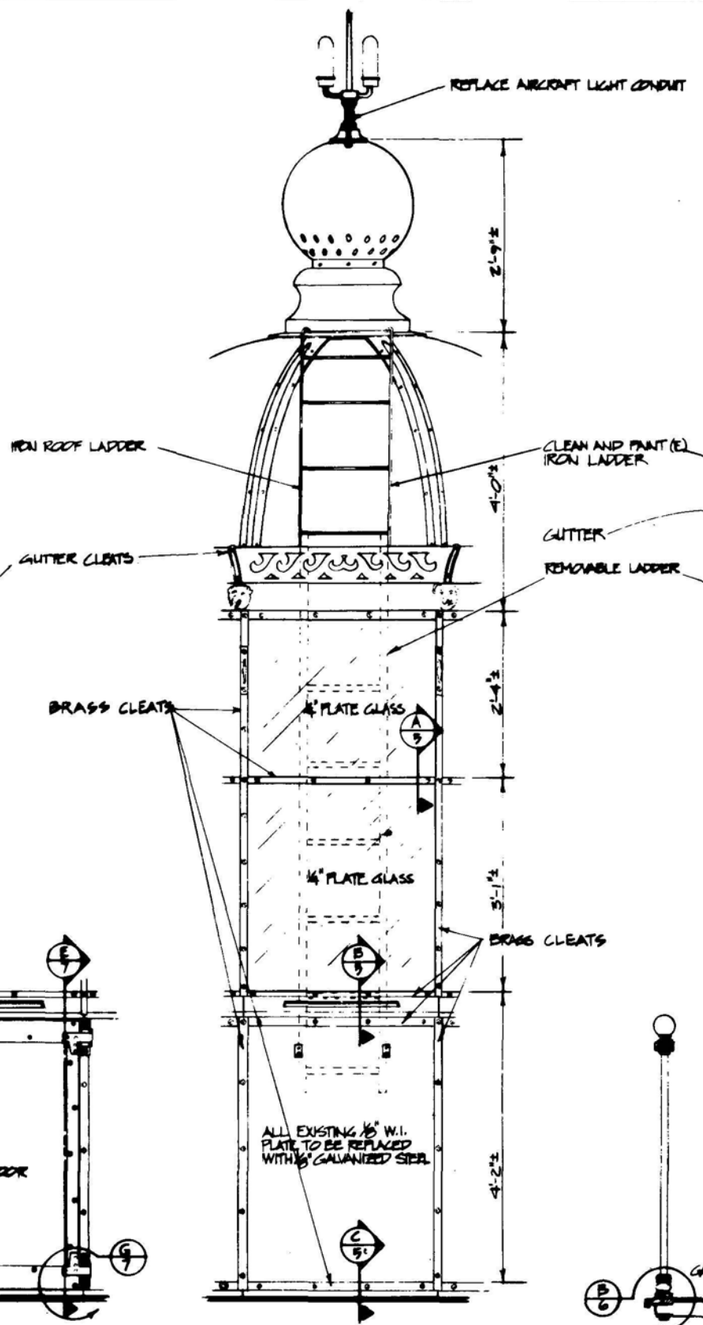
ON MICROFILM

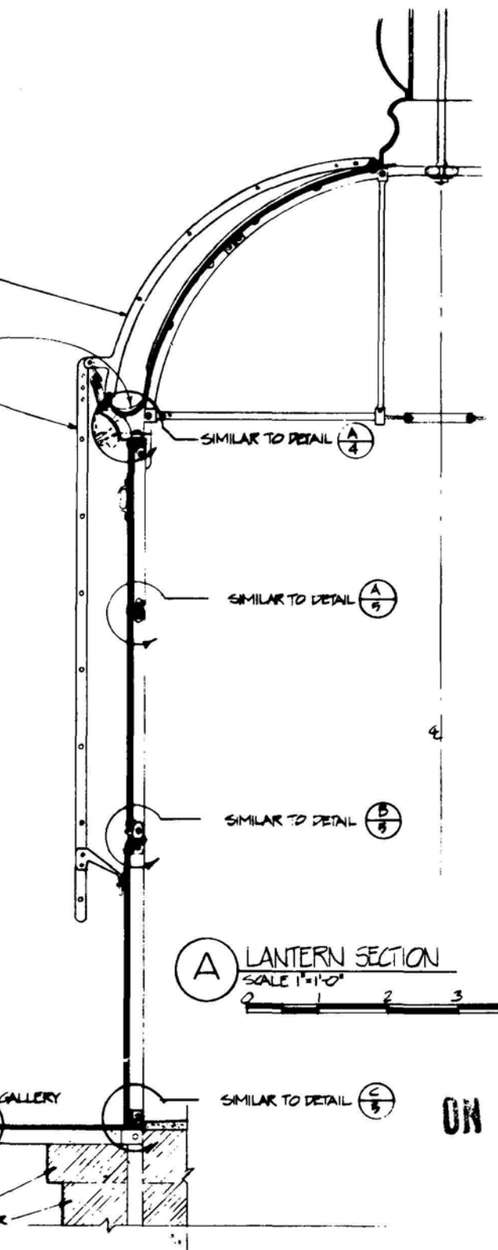
PREPARED	DRAWING NO.
H. LAW DESIGNED SNOW/LAW DRAWN R. CARTER CHECKED 2/1/80 DATE	362 20,000 A
PCIP PKG. 123	SHEET 2 OF 10

OLD POINT LOMA LIGHTHOUSE • PRESERVATION HISTORIC STRUCTURE REPORT

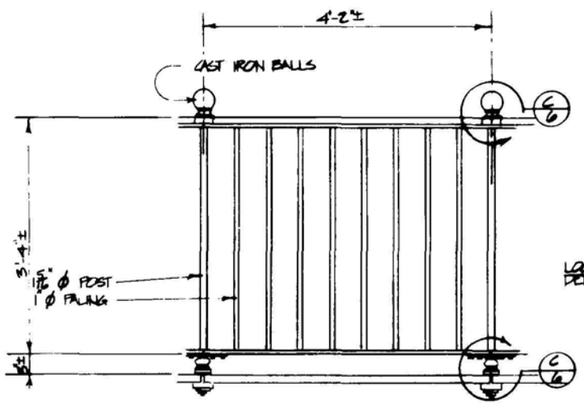


E LANTERN ROOF PLAN
SCALE 1"=1'-0"

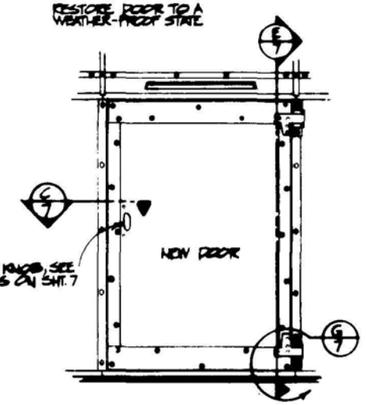




A LANTERN SECTION
SCALE 1"=1'-0"
0 1 2 3 4 FEET



B RAILING PANEL AT GALLERY, TYP.
SCALE 1"=1'-0"



C GALLERY ACCESS DOOR
SCALE 1"=1'-0"

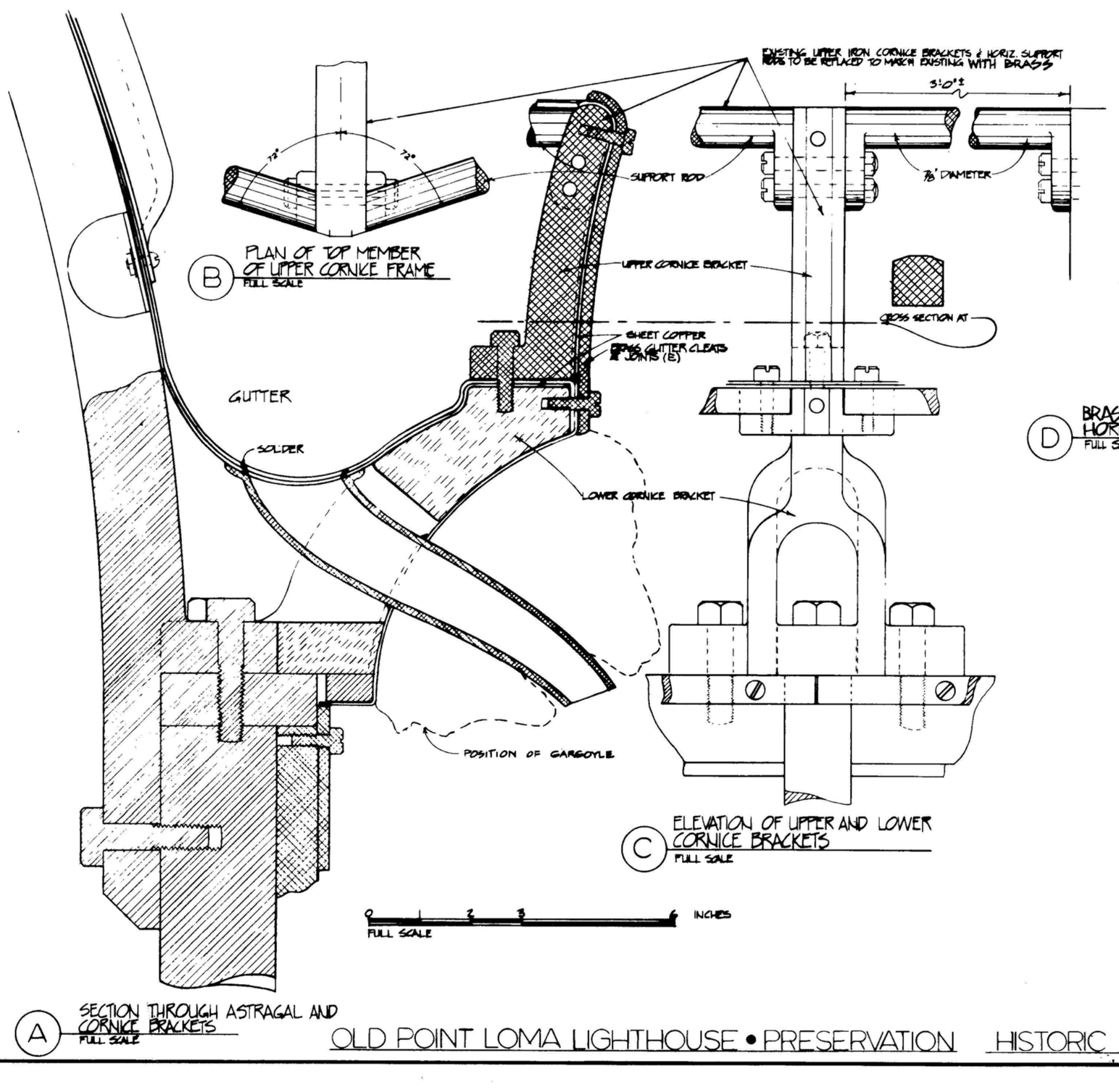
D TYPICAL LANTERN PANEL
SCALE 1"=1'-0"

ON MICROFILM

PREPARED	DRAWING NO.
H. LAW	342 A
DESIGNED	28,000
SAVON/LAW	PCTP PKG. 125
DRAWN	SHEET
R. CARPER	3
CHECKED	OF 10
2/1/80 DATE	

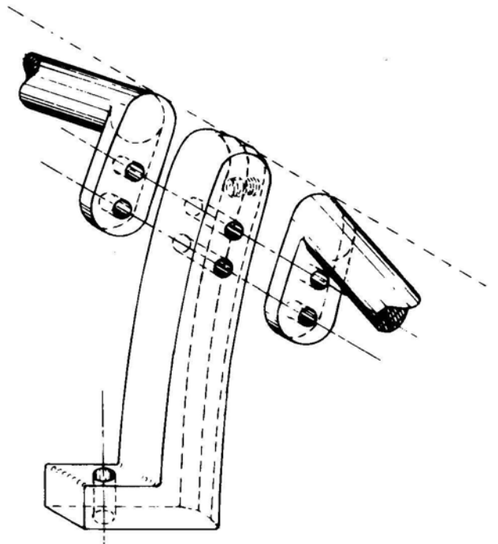
OLD POINT LOMA LIGHTHOUSE • PRESERVATION HISTORIC STRUCTURE REPORT

EXISTING UPPER IRON CORNICE BRACKETS & HORIZ. SUPPORT RODS TO BE REPLACED TO MATCH EXISTING WITH BRASS



B PLAN OF TOP MEMBER OF UPPER CORNICE FRAME
FULL SCALE

C ELEVATION OF UPPER AND LOWER CORNICE BRACKETS
FULL SCALE



D BRASS CORNICE BRACKET & HORIZONTAL ROD; OBLIQUE VIEW
FULL SCALE

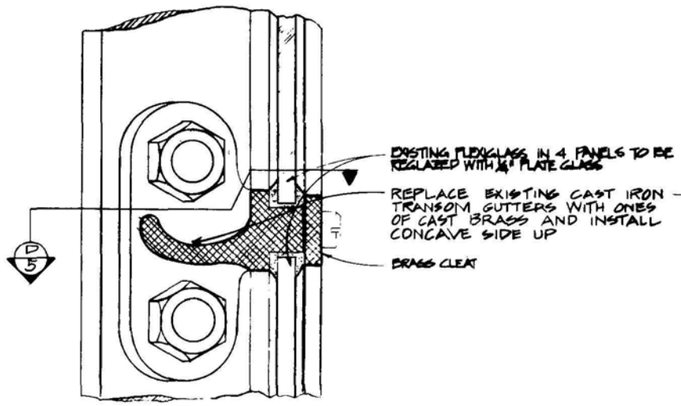
A SECTION THROUGH ASTRAGAL AND CORNICE BRACKETS
FULL SCALE

0 1 2 3 6 INCHES
FULL SCALE

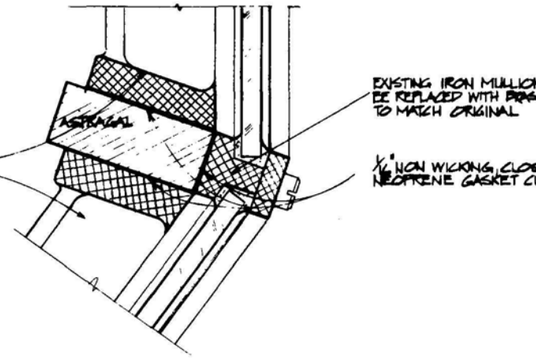
ON MICROFILM

OLD POINT LOMA LIGHTHOUSE • PRESERVATION HISTORIC STRUCTURE REPORT

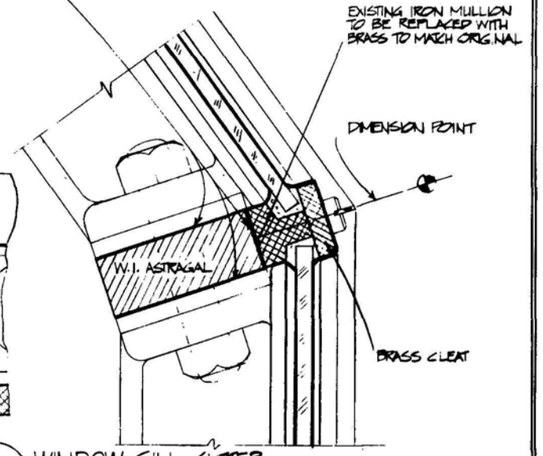
PREPARED	DRAWING NO.
H. LAW	342 / 28,000 A
DESIGNED SNOW/LAW	PCIP PKG 123
DRAWN R. CARPER	SHEET 4
CHECKED	OF 10
DATE 7/1/80	



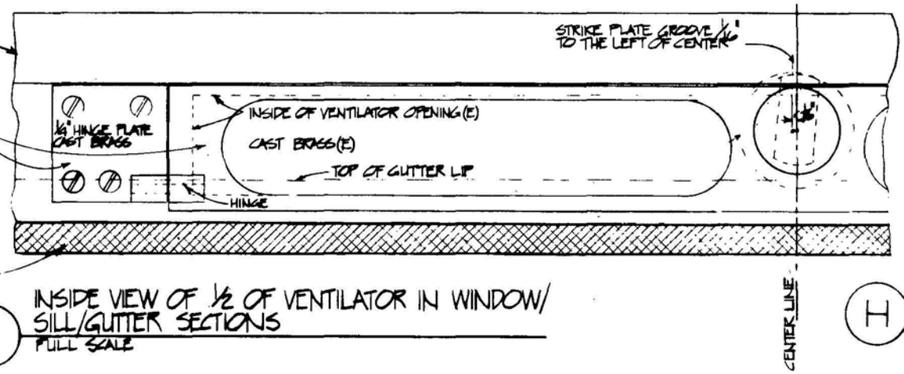
A TRANSOM GUTTER
FULL SCALE



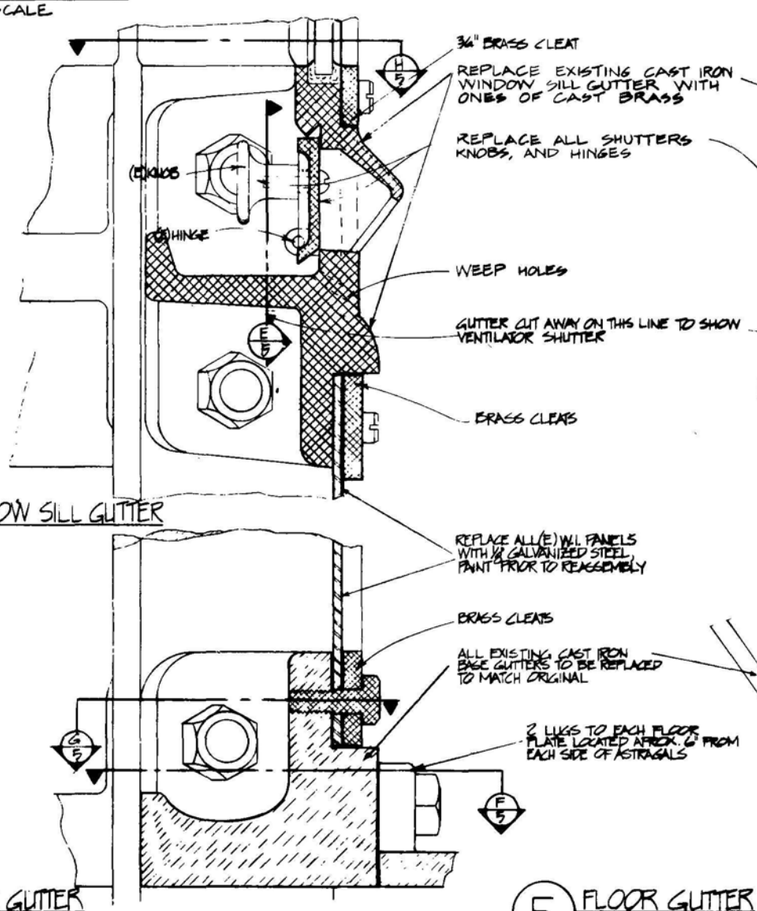
D TRANSOM GUTTER
FULL SCALE



H WINDOW SILL GUTTER
FULL SCALE

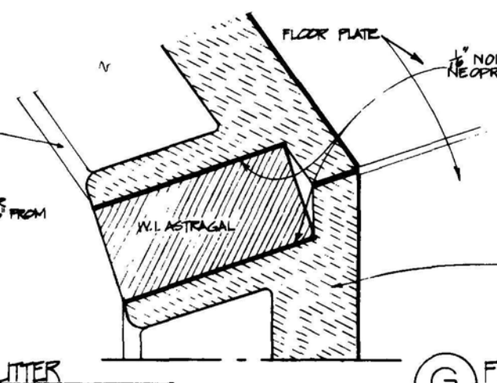


E INSIDE VIEW OF ½ OF VENTILATOR IN WINDOW/ SILL/GUTTER SECTIONS
FULL SCALE

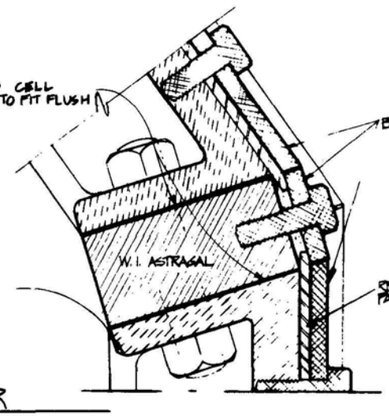


B WINDOW SILL GUTTER
FULL

C FLOOR GUTTER
FULL SCALE



F FLOOR GUTTER
FULL SCALE



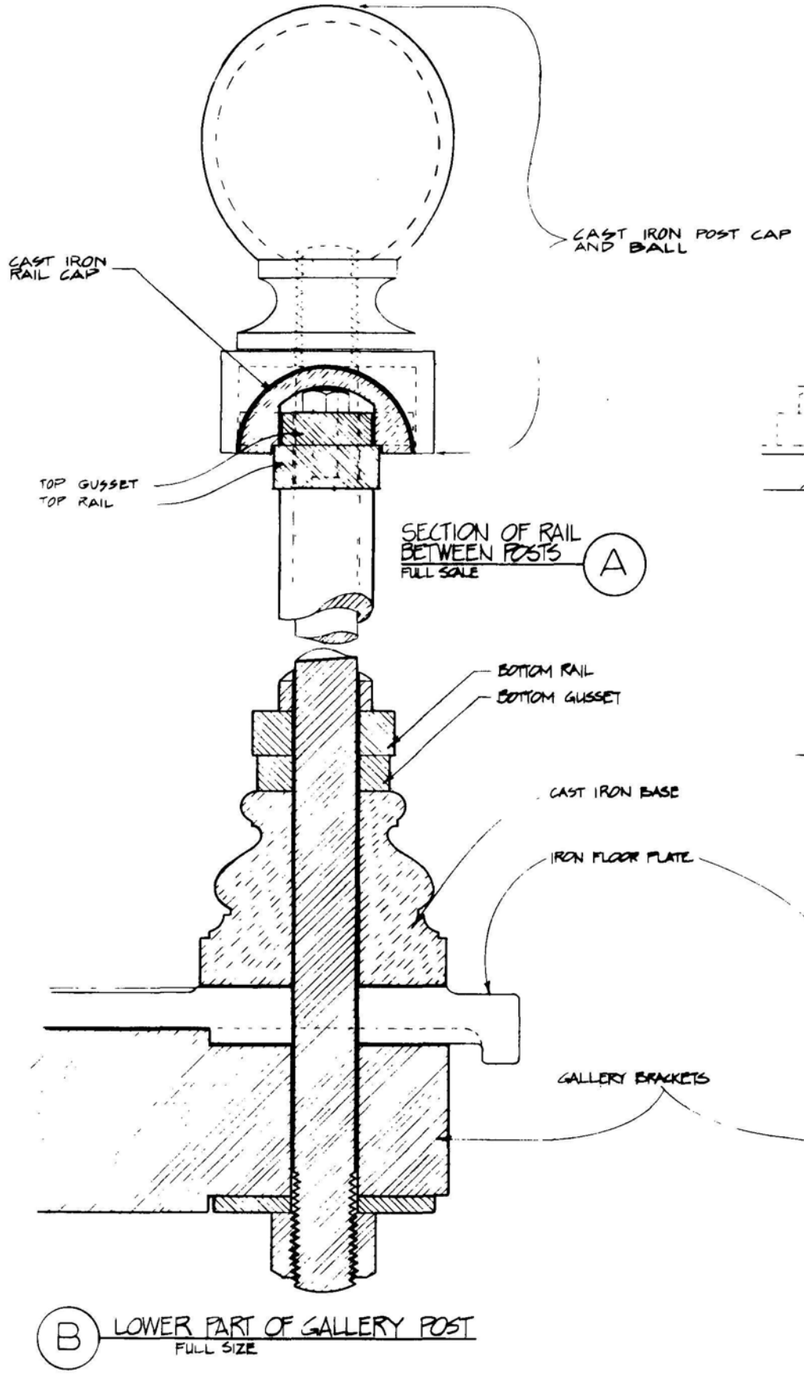
G FLOOR GUTTER
FULL SCALE

0 1 2 3 INCHES
FULL SCALE

ON MICROFILM

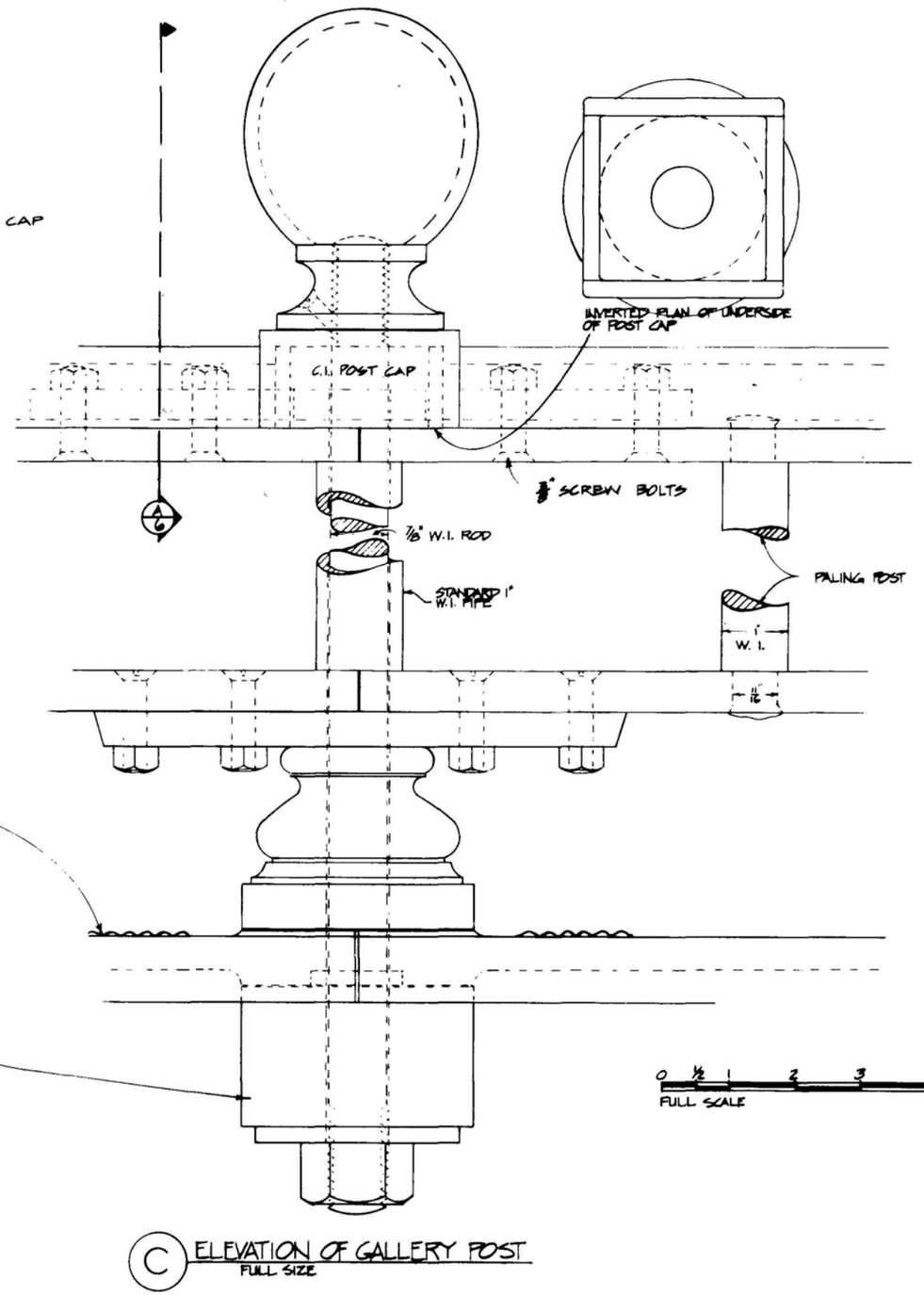
PREPARED	DRAWING NO.
H LAW	342
DESIGNED	29,000 A
LAW/SNOW	PCIP PKG. #3
DRAWN	SHEET
R. CARTER	5
CHECKED	OF 10
2/1/80	
DATE	

OLD POINT LOMA LIGHTHOUSE • PRESERVATION HISTORIC STRUCTURE REPORT



SECTION OF RAIL BETWEEN POSTS (A)
FULL SCALE

(B) LOWER PART OF GALLERY POST
FULL SIZE



(C) ELEVATION OF GALLERY POST
FULL SIZE

REPLACE THE POST CAP AND BALL ON POSTS 2,3,4,5,6,7,8,+9
REPLACE THE PIPE ON POSTS 3,4,5,6,7,8,+9
REPLACE THE FIRST AND EIGHTH PALING POSTS BETWEEN POSTS 3+4 AND THE FIRST AND SEVENTH PALING POSTS BETWEEN POSTS 4+5
SEE LANTERN PLAN D-2

0 ½ 1 2 3 6 INCHES
FULL SCALE

ON MICROFILM

PREPARED	DRAWING NO.
H. LAW DESIGNED	342 / 28,000 A
LAW/SNOW DRAWN	PCTP PKG 129 / SHEET 6
R. CARTER CHECKED	OF 10
2/1/80 DATE	

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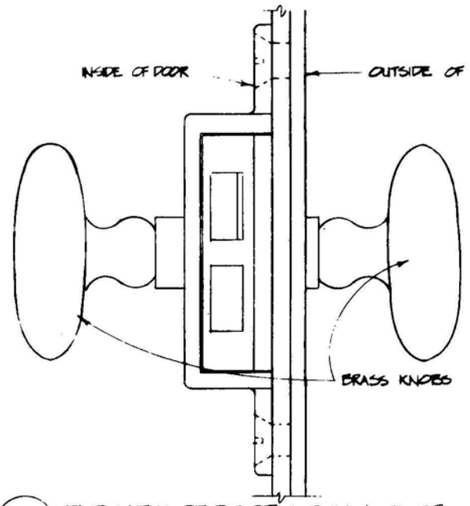
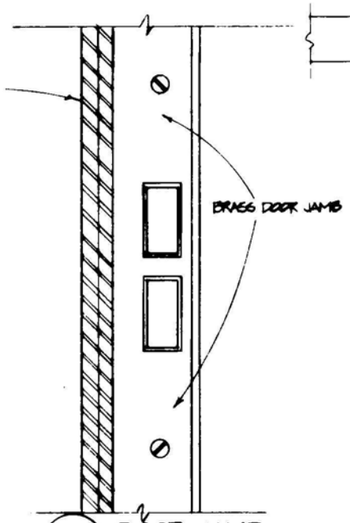
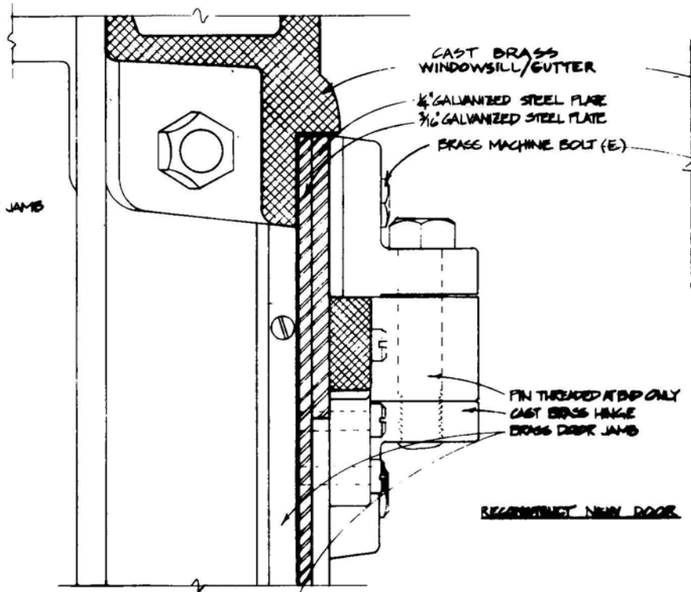
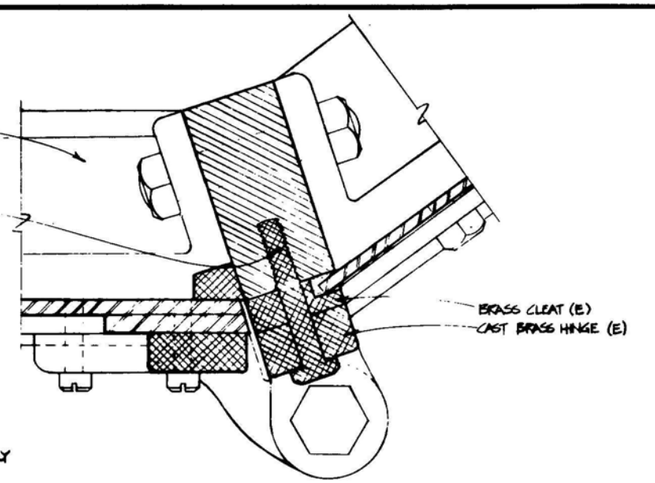


A END VIEW OF DOOR LOCK & KNOB
FULL SCALE

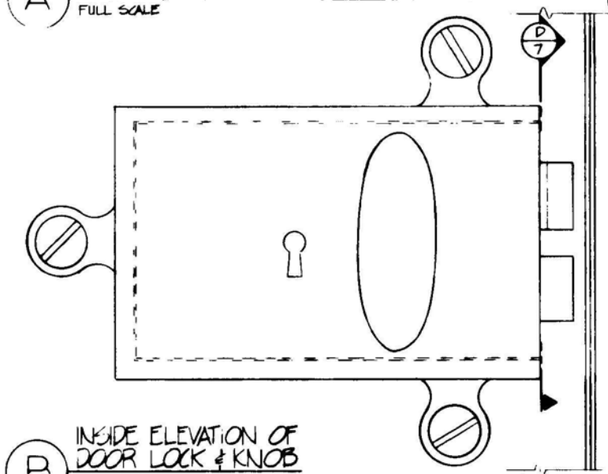


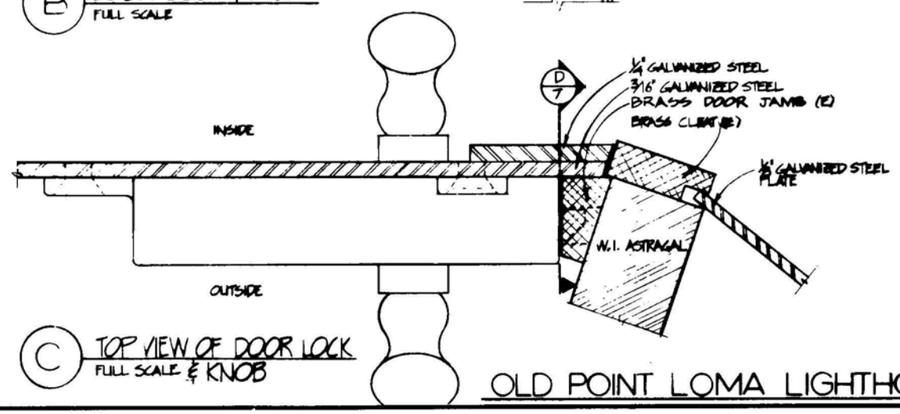
D DOOR JAMB
FULL SCALE

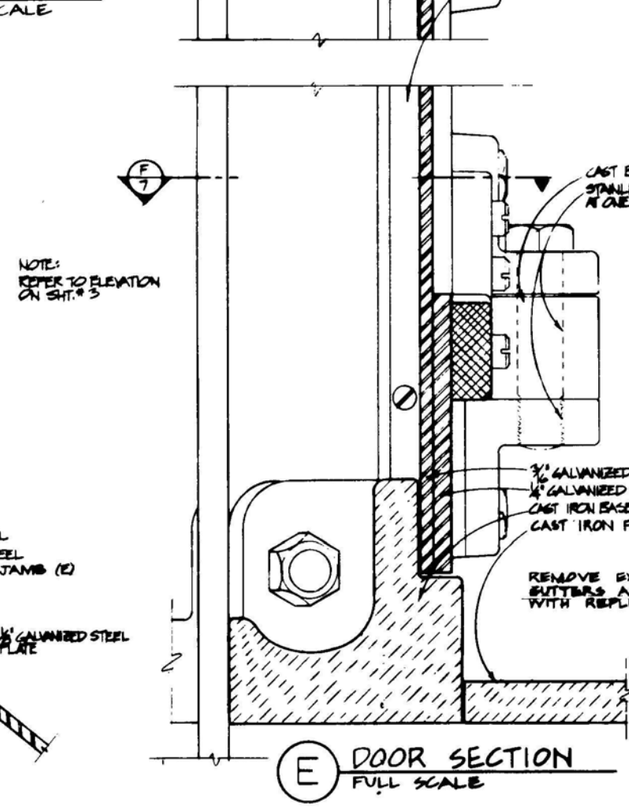




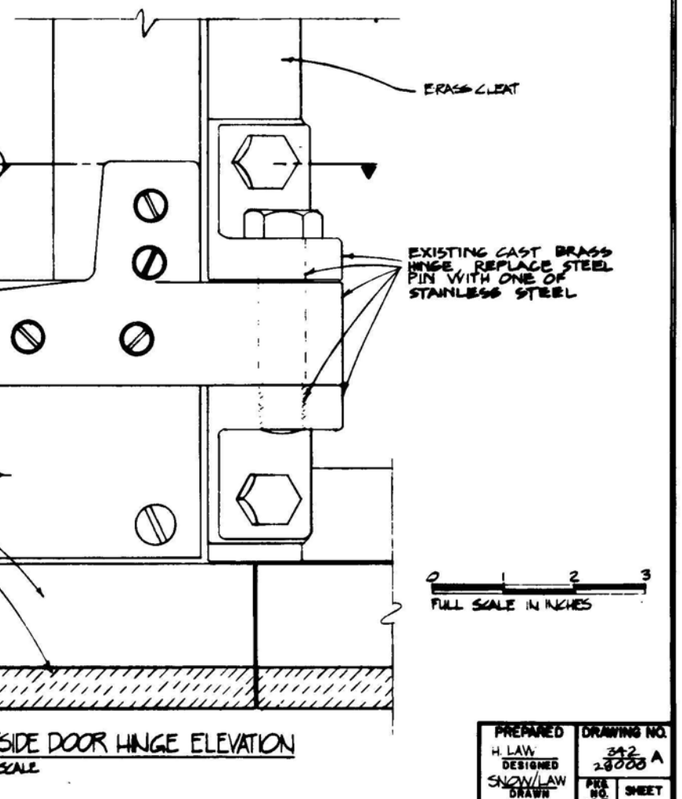
F DOOR HINGE PLAN
FULL SCALE







E DOOR SECTION
FULL SCALE

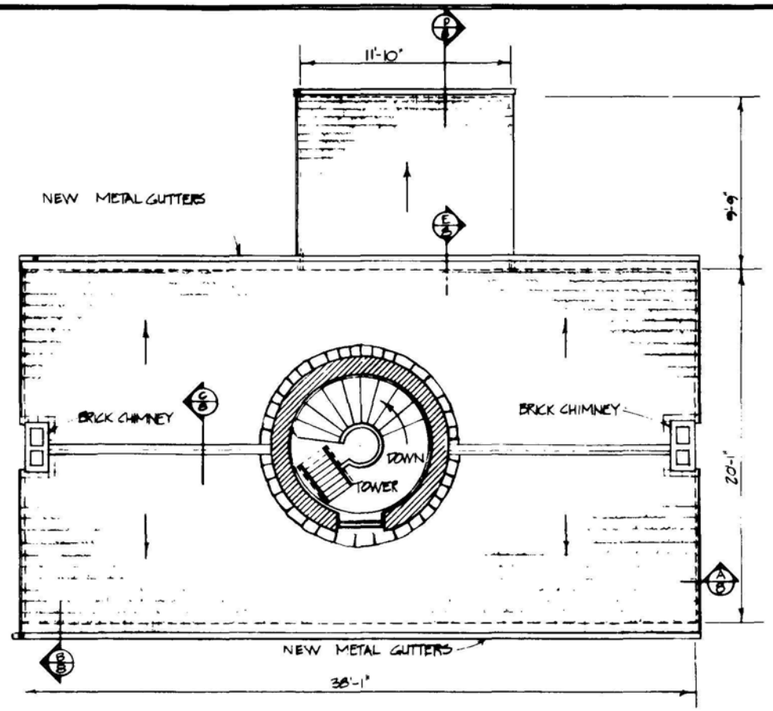


G OUTSIDE DOOR HINGE ELEVATION
Full Scale

OLD POINT LOMA LIGHTHOUSE • PRESERVATION HISTORIC STRUCTURE REPORT

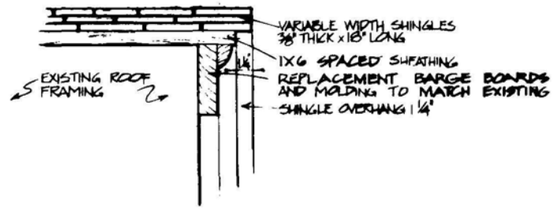
PREPARED	DRAWING NO.
H. LAW DESIGNED	342 28000 A
SNOW/LAW DRAWN	PRJ. NO. 125
R. CARTER CHECKED	SHEET 7
2/1/80 DATE	OF 10

ON MICROFILM

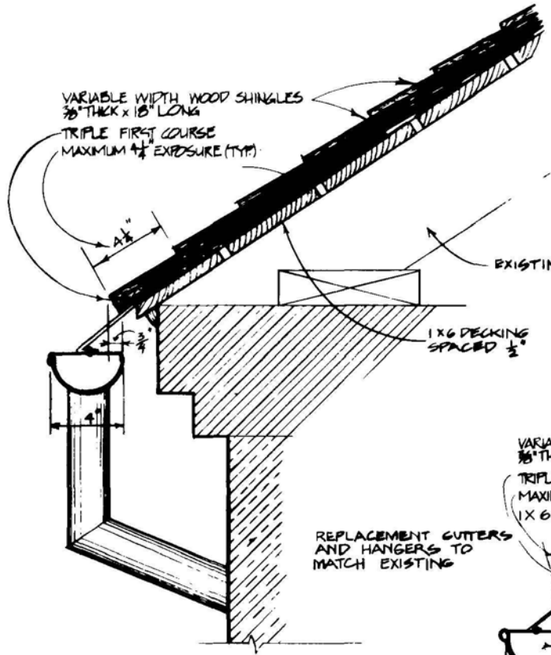


F ROOF AND TOWER PLAN
SCALE 1/4"=1'-0"
0 5 10 15 FEET

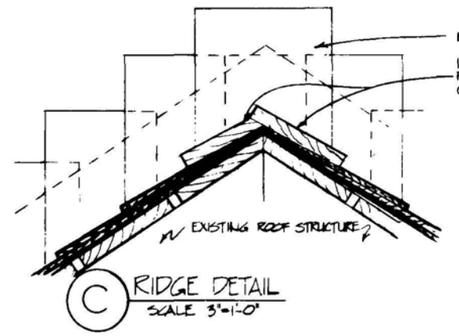
REPLACE EXISTING ROOF DECKING WITH 1X6 SPACED SHEATHING
REPLACE ALL ROOFING WITH WOOD SHINGLES
PLACE FLASHING AROUND TOWER AND CHIMNEYS
REPLACE GUTTERS AND DRAINSPOUTS
REPLACE BARGE BOARDS AND MOLDING ON THE GABLES



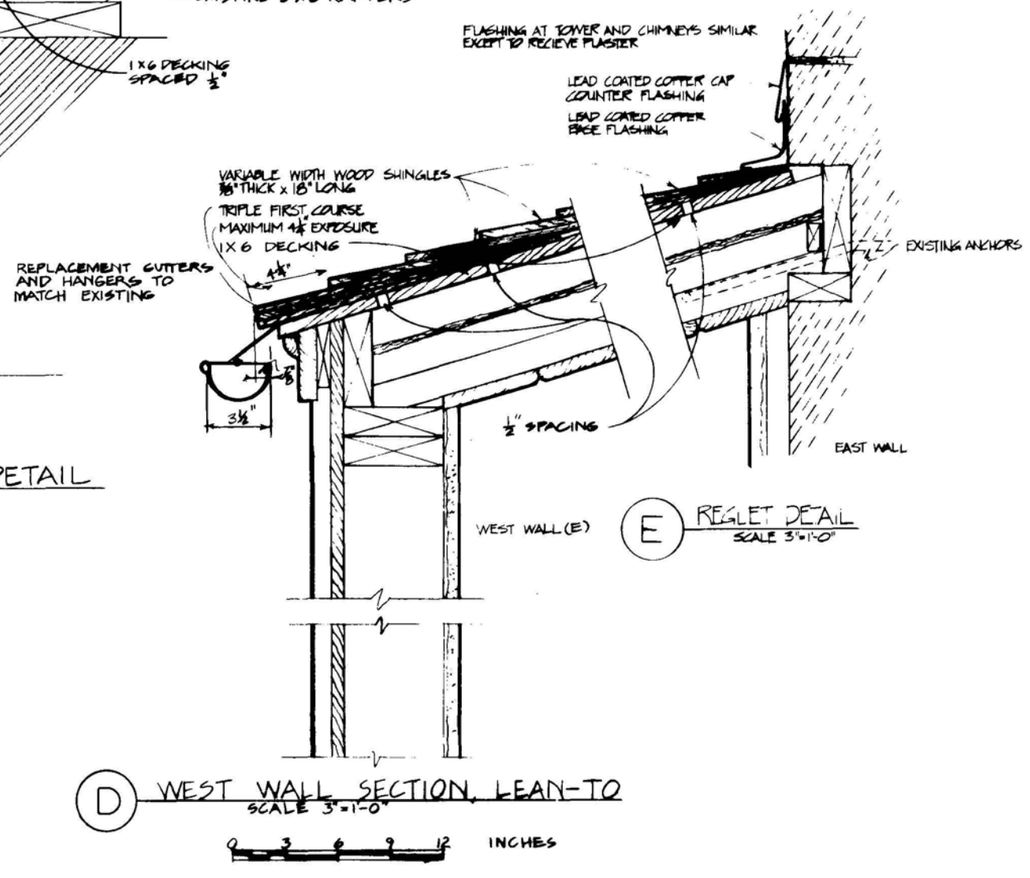
A TYPICAL GABLE END
SCALE 3"=1'-0"



B RAIN LEADER DETAIL
SCALE 3"=1'-0"



C RIDGE DETAIL
SCALE 3"=1'-0"



E REGLET DETAIL
SCALE 3"=1'-0"

D WEST WALL SECTION, LEAN-TO
SCALE 3"=1'-0"
0 3 6 9 12 INCHES

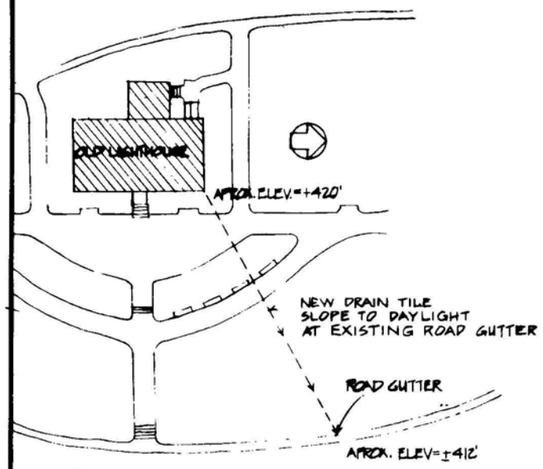
OLD POINT LOMA LIGHTHOUSE • PRESERVATION

HISTORIC STRUCTURE REPORT

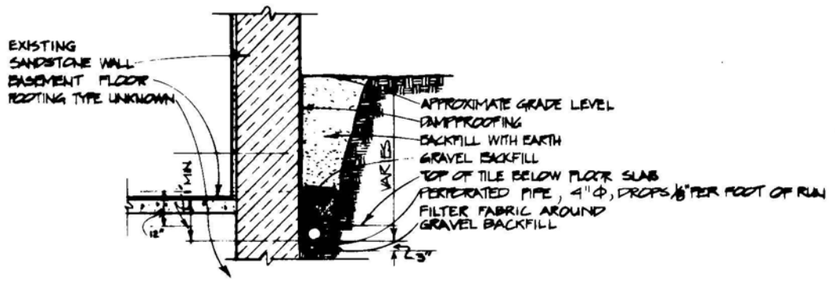
ON MICROFILM

PREPARED	DRAWING NO.
H. LAW DESIGNED	342 28000 A
LAW/SNOW DRAWN	HSR: 123 SHEET
R. CARPER CHECKED	8
2/1/00 DATE	OF 10

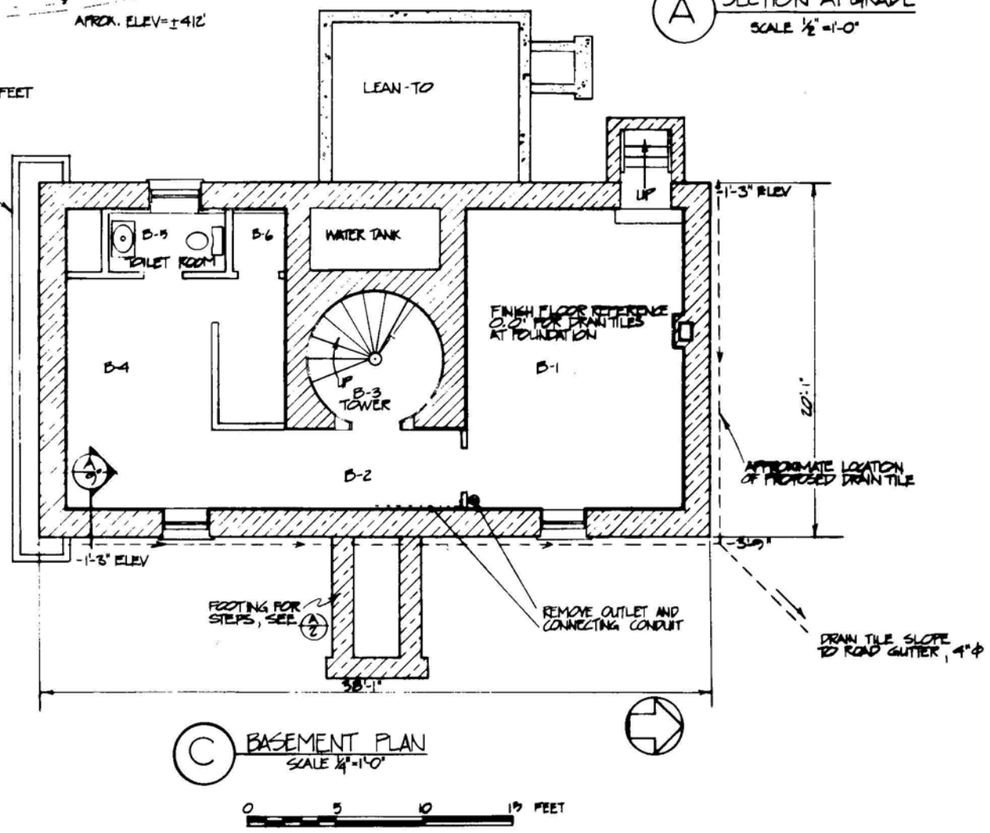
* GPO 1977 780 761



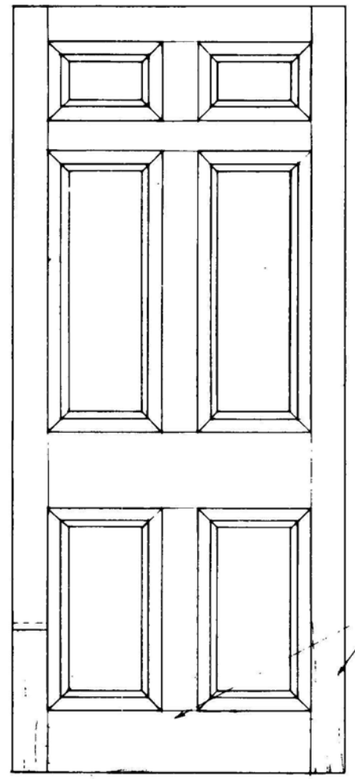
B SITE PLAN
SCALE 1" = 20'
0 10 20 30 40 FEET



A SECTION AT GRADE
SCALE 1/2" = 1'-0"



C BASEMENT PLAN
SCALE 1/4" = 1'-0"
0 5 10 15 FEET

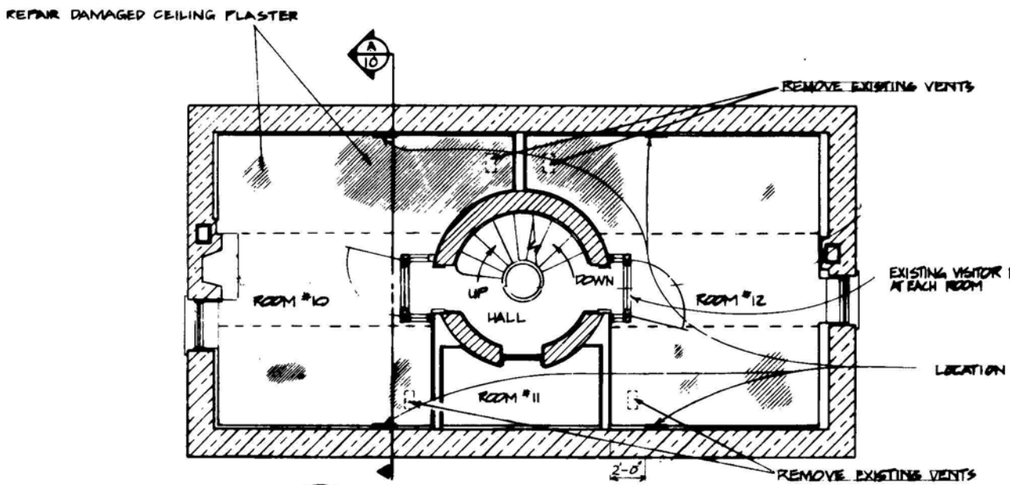


D FRONT ENTRY DOOR DETAIL
SCALE 1/2" = 1'-0"
0 1 2 3 4 5 6 FEET

ON MICROFILM

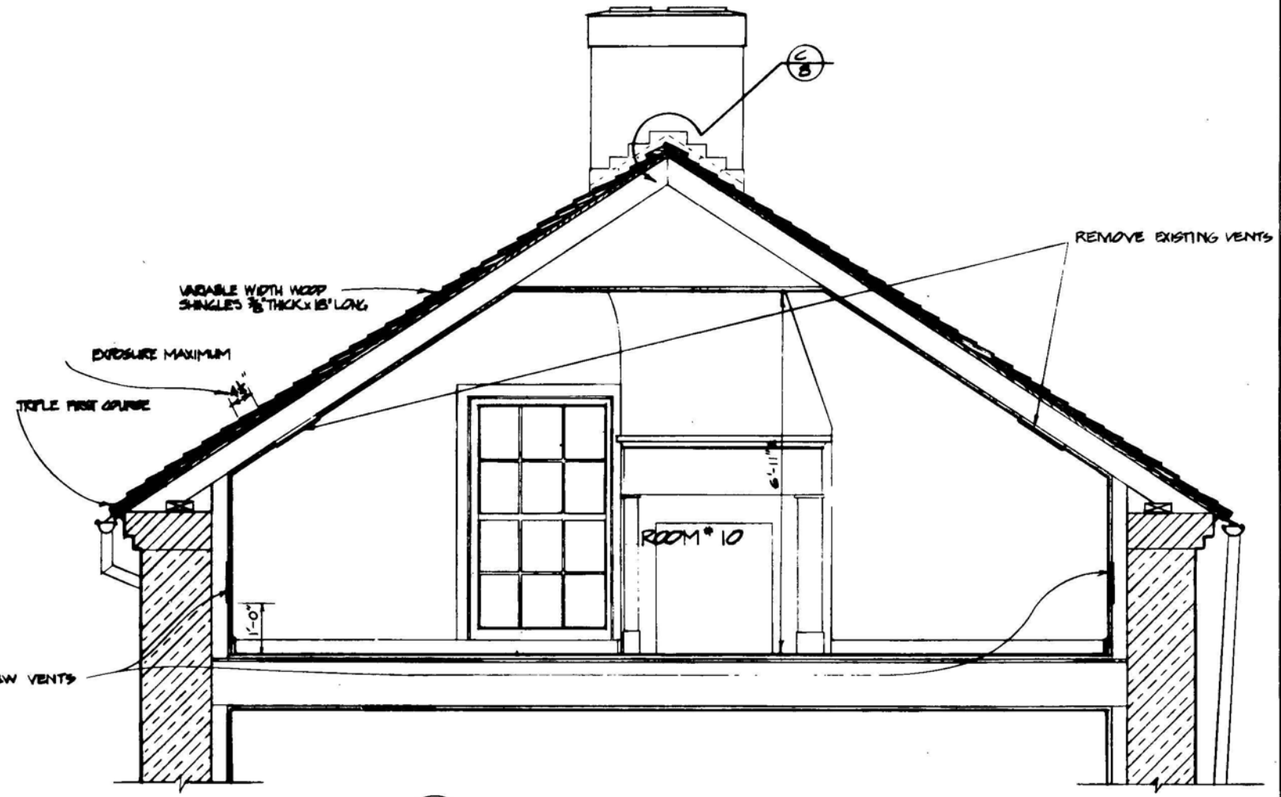
OLD POINT LOMA LIGHTHOUSE • PRESERVATION HISTORIC STRUCTURE REPORT

PREPARED H. LAW	DRAWING NO. 342 28,000 A
DESIGNED D. SNOW/H. LAW	PCTP PKG 125
DRAWN R. CARPER	SHEET 9 OF 10
CHECKED 2/1/80	
DATE	



B SECOND FLOOR PLAN
SCALE 1/4"=1'-0"

0 5 10 15



A SECTION AT SECOND FLOOR
SCALE 3/4"=1'-0"

0 1 2 3 4 5 FEET

ON MICROFILM

OLD POINT LOMA LIGHTHOUSE • PRESERVATION HISTORIC STRUCTURE REPORT

PREPARED	DRAWING NO.
H. LAW DESIGNED	342 / 20,000 A
LAW/SNOW DRAWN	PCHP PKG 123 / SHEET 10
R. CARPER CHECKED	OF 10
2/1/80 DATE	

GPO 1977 O - 55

> There were home-made bed frames . . . . It would be considered pretty rough carpentering, I suppose. But we were all comfortable. I do not remember comfortable chairs. There were these rough benches. Calico curtains across a corner protected our everyday clothes. Our best things were in chests. The dining table downstairs was of the same kind of rough boards.[3]

A rather austere picture is thus painted and one wonders about its accuracy. Actually one can not but help suspect that the Israels indeed had a few comfortable chairs since Captain Israel was a chair maker by trade. But the credibility of this statement, however, is of little importance. The lighthouse is to be refurnished to reflect the life of nineteenth century lighthouse keepers generally, not just one particular family. Nineteenth century lighthouse keepers were not, as a group, well endowed financially, but they were able to secure reasonably decent, though not expensive, furniture; they possessed something more than "rough benches."

The importance of Mrs. Robinson's statement, however, is that it underscores the belief that the furnishings in the lighthouse should not be elegant, but rather simple, sparse, and adequate.

The individual rooms, of course, had special uses. The lean-to was the place, evidently, where food was stored and prepared and where the dishes were washed. The lower north room was the kitchen and dining area, while the lower south room was the parlor or living room. The two rooms on the upper floor were

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3. Winifred Davidson, "no. 355," San Diego Historical Society Quarterly, v. I, no. 4 (October 1955):49.

both probably used as bedrooms; certainly the south one was since the last person born in the lighthouse reports that this was the room where he was born. In view of the number of children the Israels had, undoubtedly the north room was a bedroom also.

Lighthouse records offer but skimpy evidence of actual tools and furnishings in the Point Loma lighthouse, or in other West Coast lighthouses. In 1858 Point Loma had Rod lamp wicks (and presumably a Rod lamp that was generally used when the keep trimmed the wicks of the regular lens lamp), linen towels, feather brushes, emery paper, ¼ can of red lead, water barrels, and strangely, reflector lamp glass chimneys. By 1873 the station had a Meade hydraulic lamp that had been in storage at the station since 1860, in a box labelled "Revolving Machinery." By 1881 Point Loma had a Funch, not a Hains, lamp as had been previoulsy reported.

In addition, by the late 1880s lighthouses had medicine chests, and in at least one Pacific Coast lighthouse there was a chest of carpenter's tools that were used for minor repairs.[4]

There is a small compartment in the tower on the upper floor which was reportedly used as a watch room. A visitor to the lighthouse in 1874 said, "There is a small room in the tower, below

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4. Hartman Bache to James P. Keating, October 9, 1858, Letterbook, Treasury Department No. 9, July 2, 1858 to November 16, 1858; R.S. Williamson to Joseph Henry, December 10, 15, 1873, L.H. Bd., 12th Dist. Eng., 1873-1874; George Dewey to G.W. Coffin, November 4, 1881, L.H. Bed., Letters to 12th Dist. Inspector, July 9, 1878 to June 29, 1882; J.H. Spotts to Henry M. Robert to Chariman, L.H. Board, Puget Sound, March 21, 1873, L.H. Bd., 12th-13th Inspector, Jan.-Aug. 1873, V. 336-B; "Circular No. 4 of 1888" in General Correspondence box, 12th L.H. Dist., 1882-1913, Box 23; all of the above in USCG, RG 26, NA.

the light, for the accommodation of the watchers, and here they pass the long hours of the night, watching alternately the light of the huge lantern . . . ." Mrs. Robinson also reported that the room had been used as a place "where keepers' helpers bunked when off duty . . . ."[5]

When one views this small compartment, ten feet wide, three feet nine inches deep and sloping from five and a half to three and a half feet in height, he has nagging doubts that the room was used for watch purposes. It is tall enough for a man to sit upright in a chair, and one could conceivably place a single bed or bunk in the compartment and lie comfortably there. Actually the room, with its crannies where the room conforms to the roundness of the tower, appears to be one where trunks or other little-used items were stored, a closet in other words.

A. Lantern

The original illuminating apparatus of the Point Loma lighthouse was of the third order. The lantern, although reconstructed in 1935 to a third order size, contains today only a fourth order lens--one in size and design not even remotely resembling the original lens.

B. Room Furnishings

The below-listed furnishings section has been prepared with the assistance of Mrs. Emily Morse who is donating most of the pieces to be used in the lighthouse.

1. Lean-to

A metal sink fitted with a pitcher pump should be placed below the window on the south wall, and low counter top

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5. San Diego Union, Feb. 22, 1874; Davidson, "no. 355," p. 49.

cabinets built on the west and south walls. Other items to be used should include:

Item	Remarks
Mirror	Plain, 12" x 18".
Washbench	Crude, 2' to 3' long, 2 feet high.
Dishpan	
Milkpan	
Wash tubs	
Iron pot	Similar to one shown in photograph of rear of lighthouse.
Table, with drawers	Pine drop-leaf table with bread board, eating utensil drawers, and rounded storage bin for flour, sugar, or corn meal.
Flatirons	Should have three or four.
Flatiron rest, triangular	
Coffee Mill	
Curtains	Calico or unbleached muslin.
Kerosene lamp	

2. Kitchen

Woodburning stove, ca. 1870	
Dining table chairs	
Dining table	
Iron tea kettle	
Iron kettle with handle	Has ring at side to help hold when pouring.
Iron kettle with cover	
Iron kettle rest, 4 legs	
Iron skillet	
Iron spider	
Cupboard	
"Best" dishes	
Glass cake stand	Argus or 1,000-eye one owned by the Israels, according to grandson. Original one still in existence.
Bracket lamp with reflector	
Eating utensils	Mrs. Morse has 4 three-tine forks and two knives which came from Machado house near Temecula. Mrs. Israel was a Machado from Old San Diego.
Silver teaspoons	
Stoneware dishes	Need either white or ti pattern plates.
Calico curtains	

3. Entrance Hall

Sewing chair	Grandson remembers Mrs. Israel telling of sewing by light that filtered down from the tower.
Small table, perhaps tilt top	
Sewing and mending baskets	Should be Mexican design.
Framed hair wreath	

4. Parlor or Living Room

Rocking chair, shaped arms, cane back and seat	
Picture frame	
Framed marine painting or lithograph	Should have at least two.
Plain desk	Something on which lighthouse keeper kept his record books and prepared reports.
Chairs	
Rugs, braided	
Kerosene lamp	
Clock, banjo type	
Table	
Andirons and poker	
Shell pictures	
White curtains	
Book case with books	Substitute portable library case if one or a description of one can be found.
Account books	
Ink stand and pen	

5. Bedroom (South)

Bed, double
Quilt
Pillow shams
Mirror
Chairs
Oak chest
Marble top commode
Slipper chair
Clothes press
Trunk
Rug, braided
Wash bowl and pitcher
Towel rack

Clothes hooks
Andirons and poker
Candleholder
White curtains

6. Bedroom (North)

Single bed
Quilt
Candle holder
Mirror
Trunk
Clothes rack
Chair — Small, cane or cow hide bottom.
Small chest
Rug, braided
Toy
Doll
Pictures

7. Watch Room

Small table
Chair
Single bed

V. ARCHITECTURAL DATA

A. Summary of Documentary Materials

1. Historical Photographs and Drawings

Many of the historical photographs are included in the Historical Data Section, documenting different conditions of the lighthouse prior to the 1935 restoration.

There are several drawings available that are associated with the lighthouse. A set of HABS drawings, on file at the Library of Congress, show the existing conditions of the lighthouse in 1934. Another set completed by the National Park Service (#3003) also show existing conditions in 1934; these are on microfilm in the Micrographics Division, National Park Service, Denver Service Center. Drawings for the restoration in 1935 (#3004) were also prepared by the National Park Service. These are also on microfilm at the Denver Service Center. Drawings #3004 have also been included in this report with minor modifications to show the existing conditions of the lighthouse at the time of this writing.

2. Other Historical Reference Material

The research by Historian F.R. Holland is very valuable. His Historical Data Section was written in 1964. At that time he had several documents in the park that pertained to the reconstruction of 1935. Among these documents are the "Report to the Chief Architect on Research and Investigation, Cabrillo National Monument," by James G. Langdon; "Report to the Chief Architect, Field Assignment on Public Works Projects at Cabrillo National Monument," by Arthur O. Johnson; and "Report on the Restoration of the Lighthouse," by Sam D. Hendricks. These reports have since been misplaced. Much of the material Holland extracted is very helpful in determining the historic fabric during different periods of the active life of the lighthouse.

The Western Regional Historian, Gorden Chappell, found one of the early construction reports on the restoration of 1935, "Final Construction Report on Alterations and Restoration of the Lighthouse," by Sam D. Hendricks. The final construction report gives a good outline narrative of the 1935 restoration with numerous photographs showing different stages of construction. A Zerox copy of the Final Construction Report by Hendricks is on file in the park. A carbon with original photographs is in the Federal Archives and Records Center in San Bruno, CA.

The final construction report of 1935 by Hendricks shows no concern with the cracks on the exterior of the tower, calling them superficial. However, he was concerned about the masonry and replaced a few layers of brick with new. During this replacement of brick in the upper portions of the tower it was discovered that there existed an iron ring connecting the base of the astragals. There was no mention of the condition of the ring other than that it existed.

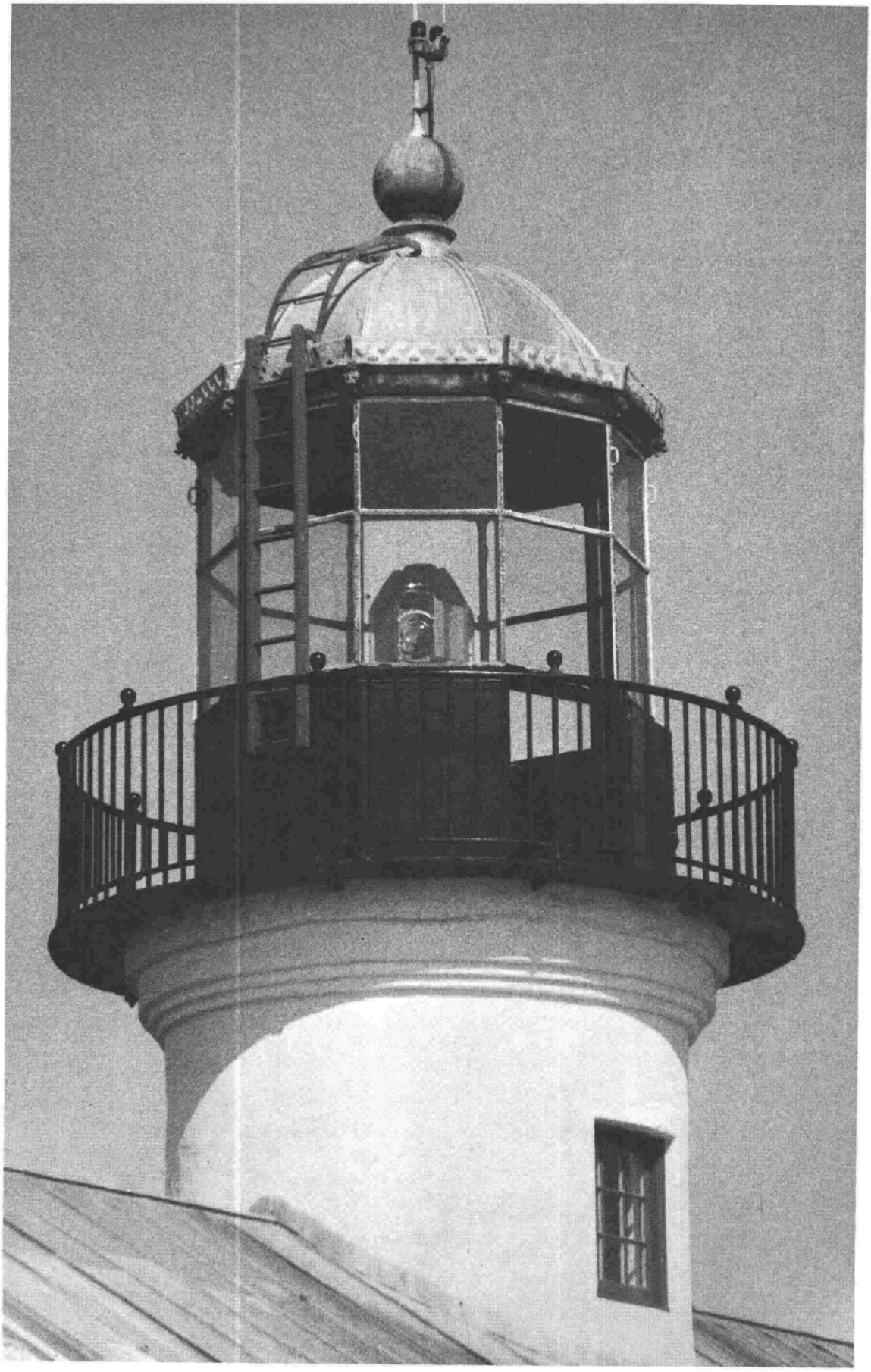
It is not known at this time what kind of brick and mortar was used for replacement. The possibility exists that the 1935 materials are different enough from the original fabric that they would react differently under stress loading conditions. The condition of the iron ring is unknown, but it is likely that it has had less deterioration since 1935, primarily because the structure was left more exposed to weathering prior to 1935 than in recent times. The cracks in the concrete floor of the lantern are another uncertainty. It is not known when these cracks first appeared. There is no recording of them in the 1935 documents that are available at this time.

B. Existing Conditions

The Old Point Loma Lighthouse is rectangular in plan (approximately 20 feet by 38 feet) with sandstone walls, and a small wood-framed lean-to added to the rear elevation (west). The north and south elevations are the smaller with gables. The main entrance door is centrally located on the east elevation with two windows on each side at the elevation of the first floor. The sandstone walls are covered with white paint and the lean-to is surfaced with stucco, and painted white. A chimney caps the top of each of the two gables. There is one window in each of the gables at the attic level which are off-center to leave room within the walls for the chimneys. The east and west stone walls rise from the ground to the eaves approximately 17 feet, where a narrow brick cornice caps the wall. There are two windows at the base of the wall, hidden by vegetation, that light the basement. The roof, surfaced with copper, rises from the cornice with parallel standing seams running perpendicular to the ridge. The brick tower supporting the lantern rises from the basement floor to approximately 6 feet above the ridge of the roof and is capped with stone, plastered over and painted white. The lantern is framed with iron, painted black, and capped with a copper roof.

The tower structure and lantern historically have had the most serious problems in terms of preservation. Before the lens was installed in 1855, shortly after the structure was completed, some of the bricks in the tower masonry had to be replaced. When the monument became part of the National Park System in the 1930s, the National Park Service had to reconstruct nearly the entire lantern to restore it.

Although the tower has withstood the various loading conditions to date, a potential of serious damage to the structure exists, as well as a safety hazard to the public. The major concern



OLD POINT LOMA LIGHTHOUSE TOWER AND LANTERN, 1977. National Park Service photograph by H. G. Law.

at this time, with regards to the tower, is the structural integrity of the upper portion of the tower including the segmental dome.

There exists a large crack in the concrete floor of the lantern, as well as vertical and horizontal cracks on the exterior of the tower. These exterior cracks are not visible at this time due to recent repainting. There is a vertical crack through the masonry cornice of the tower at each gallery bracket. The horizontal cracking is located approximately at the level where the segmental dome springs from the wall. These cracks appear in several photographs taken earlier and have been the concern of other professionals evaluating the structure. A photograph of the building taken circa 1915 shows a major horizontal crack in the tower, which appears to be the same as the one existing most recently (see photo 89).

Regional Historical Architect Robert Cox expressed concern with the cracks and took pictures of some of them which he included in a report on the structure in 1972. When the structure was surveyed as part of the List of Classified Structures (LCS), the cracks were listed as of major concern by the surveying architect, Kenneth Keane, in 1976. Mr. Keane also included photographs of the cracks with a memorandum of concern about the structural integrity of the tower. Structural Engineer Maurice Paul of the Denver Service Center visited the structure during the winter of 1977 and at that time was mostly concerned with the severe state of corrosion existing in the lantern structure. His investigation revealed that large pieces of rusted metal were loose and falling to ground level presenting a severe safety hazard to the visitor. Additionally, he was very concerned with means of excluding water from the lantern interior and from the vulnerable parts of the latern gallery in order to retard the degradation and maintain the structure until such time that proper preservation and

stabilization methods could be determined. This investigation prompted the park to do a lot of chipping of rust and loose metal, caulking of voids, and painting. Most of the metal work on the lantern is in somewhat of a holding pattern at this time.

The cracks in the floor of the lantern are a possible source of moisture reaching the iron ring at the base of the astragals. When Maurice Paul observed the lantern during rain in March of 1977, most of the moisture was coming through the broken shutters on the window sill vents, the poorly hung exterior door, and the deteriorated wrought iron panels. There was some rain during this reseacher's visit to the site and it was observed that the floor does get some moisture during rainy weather.

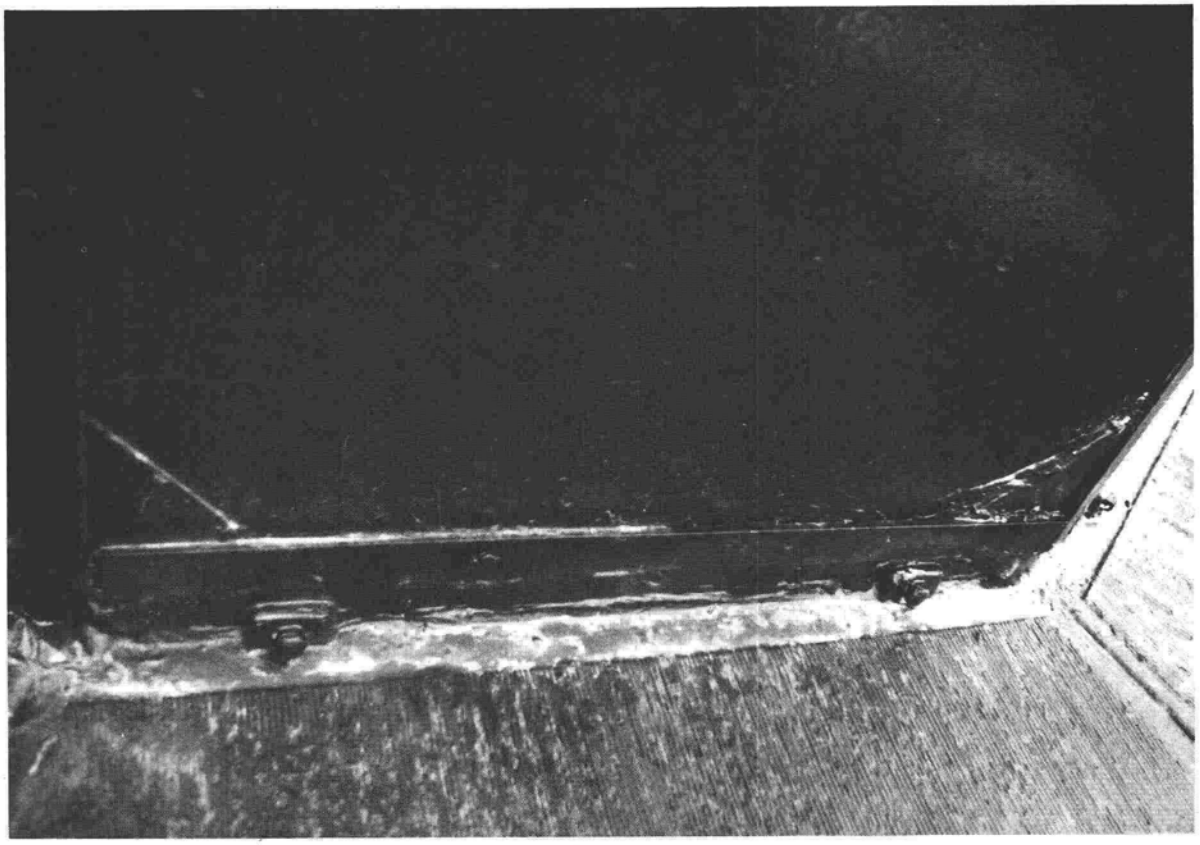
It is likely that the floor moisture enters the lantern through the door. There are large gaps around the door when closed, and it does not keep out the rain. The small amount of moisture on the window sill gutters could have been blown in through the vents. This is still very difficult to determine, as these gutters have weep holes, thus it is not known how much moisture actually was collected. During Maurice Paul's observations of moisture, the window sill gutters were practically filled with water prior to opening the rusted weep holes.

Parts of the floor gutters have disintegrated from corrosion. Many of the lower corners of the iron wall plates have disintegrated where these components meet the base of the astragals. Here again is a potential of moisture getting to the embedded iron in the masonry tower. The park has temporarily alleviated this situation by applying caulking at these joints and painted over them.

OLD POINT LOMA LIGHTHOUSE TOWER PRIOR TO THE MOST RECENT CAULKING AND REPAINTING, 1977. NOTE THE CRACKS IN THE MASONRY. National Park Service photograph Cabrillo National Monument.

The lantern structure, although temporarily stabilized, is in poor general condition. The main structural members of the lantern; the vertical astragals, tierods, rafters, and purlins, are original fabric and are in fair condition. However, much of the fabric dating back to the 1935 restoration is in a deteriorated condition. The major reason for this deterioration is the use of iron rather than brass in many areas that were originally brass. After investigating the condition of several lighthouse lanterns and comparing the use of materials, the mullions and transom/gutters were found to be brass in every structure. Brass appeared to be used wherever the metal framework came in contact with the glazing. The only other existing lighthouse with a third order lantern, built from the same contract as Point Loma, is the Point Pinos lighthouse in Pacific Grove, California. Point Pinos was used as a guide for the restoration of 1935, however different materials were used. At Point Pinos, the gutter/mullions and window sill/gutter/ventilators are all of cast brass with no problem of galvanic corrosion. At Point Loma, all of these elements are of cast iron, deteriorated, and causing damage to original fabric (the astragals). The window mullions, which were specified to be brass on the restoration drawings, are of iron and have deteriorated due to rust.

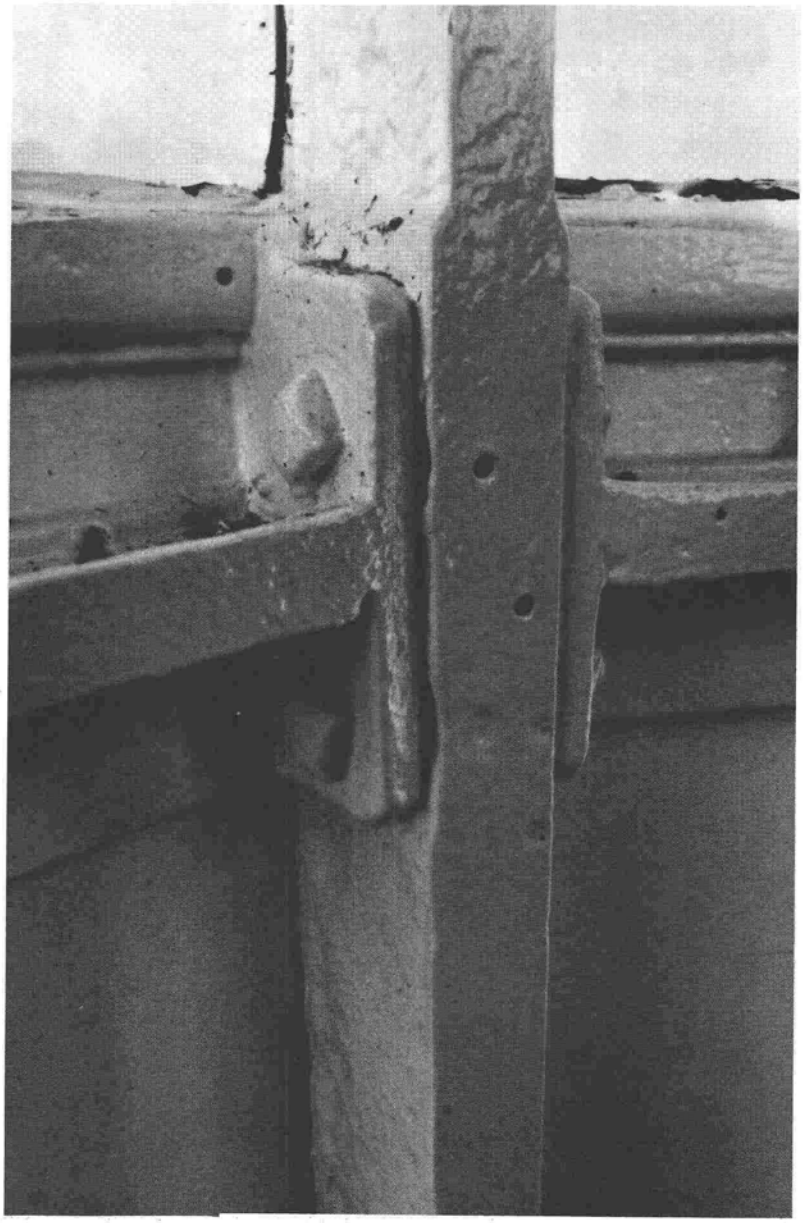
Metals and alloys can be arranged in a table of decreasing chemical activity (galvanic series). The further apart a given pair of metals in the series the greater the potential for dissimilar metal attack. This is most important when specifying a copper alloy (brass) to be in contact with an iron. Another variable can be the ratio of exposed area of the more active in relation to the less active type. It appears that early lighthouse builders knew what they were doing. The replacement brass (copper alloy) should be of a type to resist corrosion in a marine environment as well as be as close as possible in galvanic series to the existing adjacent iron.



OLD POINT LOMA LIGHTHOUSE, EXISTING PANEL ON LANTERN, 1977. NOTE WHERE LOWER CORNERS HAVE BEEN PATCHED. National Park Service photograph by H. G. Law.

OLD POINT LOMA LIGHTHOUSE, 1977, DETAIL AT BASE OF LANTERN SHOWING DETERIORATED CONDITION OF A PANEL CORNER AND ADJACENT ASTRAGAL. National Park Service photograph Cabrillo National Monument.

POINT PINOS LIGHTHOUSE, WEST ELEVATION, 1979. National Park Service photograph by H. G. Law.



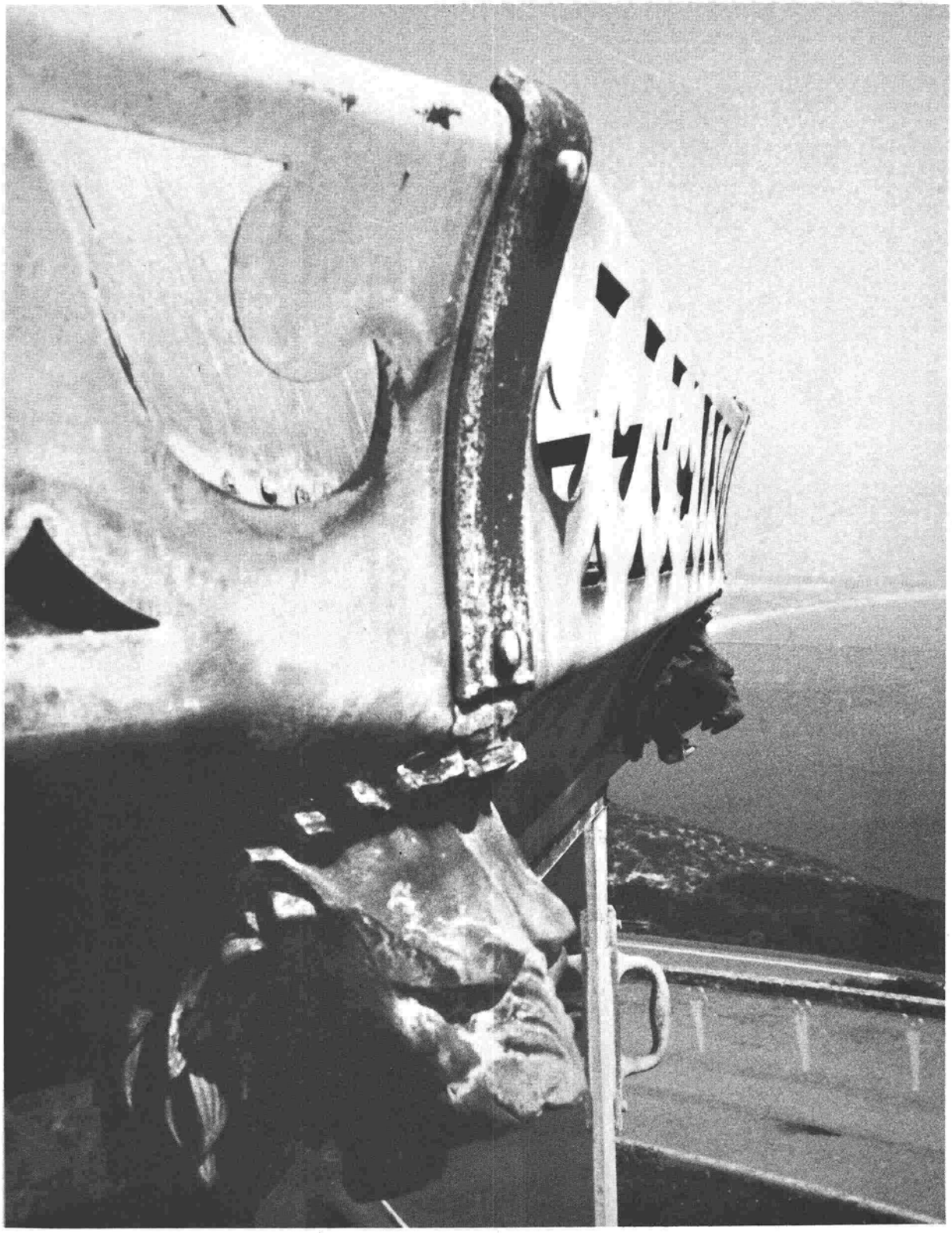
OLD POINT LOMA LIGHTHOUSE, 1979. TYPICAL DETAIL OF WINDOW SILL/ GUTTER CONNECTED TO THE VERTICAL ASTRAGAL. NOTE THE GAPS LEFT FROM PIT CORROSION. THESE GAPS ARE IDEAL FOR THE CREATION OF MORE PIT CORROSION. National Park Service photograph by H. G. Law

Due to the pitting of the Astragals from crevice corrosion, the surface is no longer smooth where it is to be joined with the transoms and gutters. This situation will create areas prime for pit corrosion when the new brass members are fitted into place. Because of this, a closed cell neoprene gasket should be placed between the two metals and fitted tightly with no excess beyond the joint to collect dirt or create another site for crevice corrosion.

These rusting mullions are most likely the reason for the glass breakage in the past. The maintenance staff cleaned a lot of rust from the structure but was not able to dismantle the lantern enough to replace the mullions. Their basic concern was to seal the structure from moisture to stop the rust and alleviate the safety hazards. In many areas they were not able to clear completely the metal of rust and they just painted over it. At the time this was the best approach, without undertaking a major restoration job. But before long all the metal should be thoroughly cleaned of all rust and repainted. It is important to recognize that this is a continual job. To maintain a lighthouse is similar to maintaining a ship at sea, but on a smaller scale. There always exists the year round job of chipping, scraping, and repainting all the metal.

The cornice of the lantern, made of sheet copper, is supported by iron brackets that are in a deteriorated condition. Many of the iron rods that span from bracket to bracket are missing. One of the brass cleats over the joints of the cornice is missing. These brass cleats are connected to the cornice brackets with screws. Many of the cleats are in danger of falling off because of the deteriorated condition of the cornice brackets. This condition also creates a leakage possibility along the gutter.

OLD POINT LOMA LIGHTHOUSE, 1977. DETAIL OF BACK OF LANTERN CORNICE. NOTE CONDITION OF CORNICE BRACKETS. National Park Service Photograph, Cabrillo National Monument.



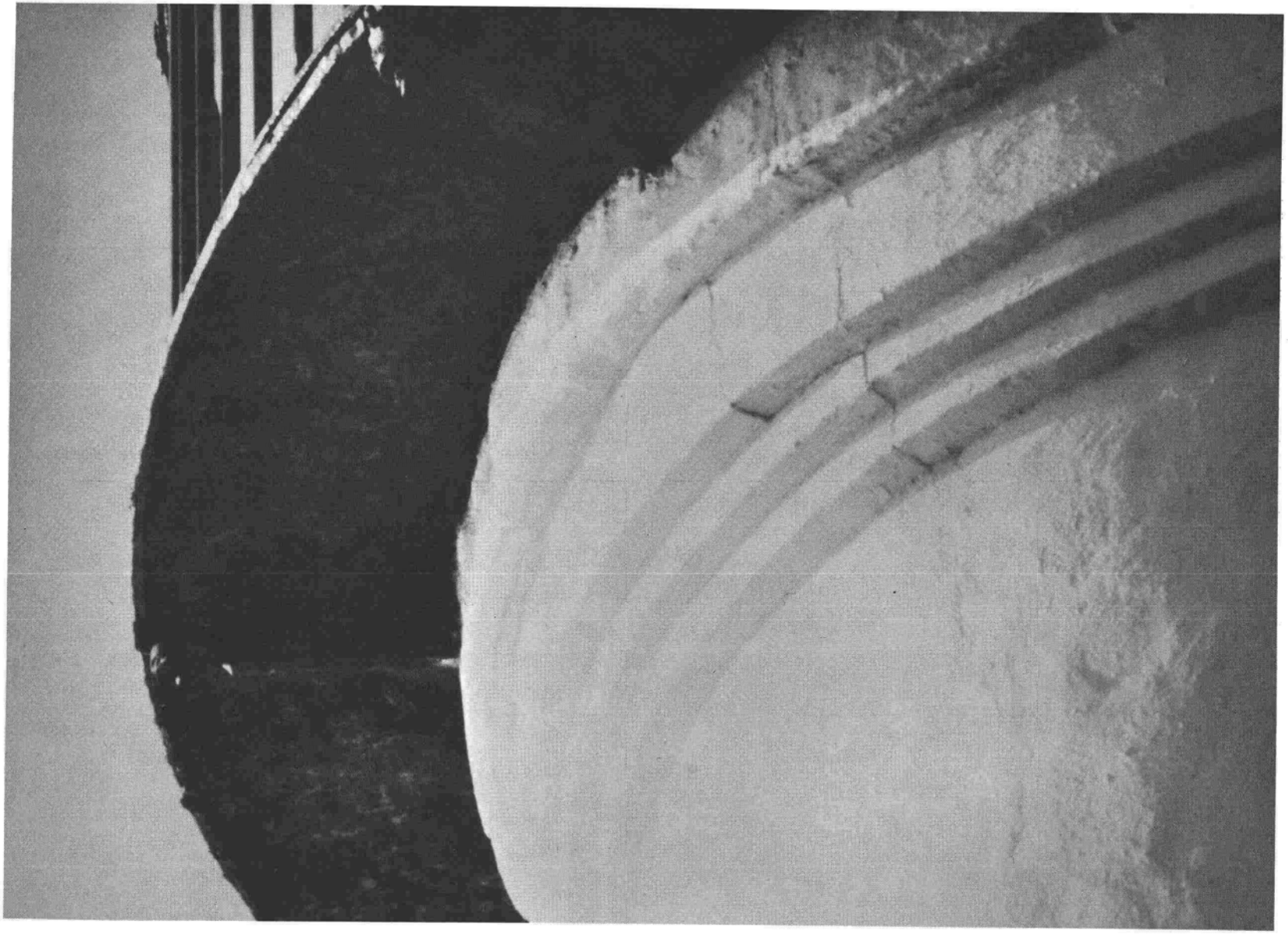
OLD POINT LOMA LIGHTHOUSE CORNICE DETAIL, 1977. NOTE CORNICE MATCHES THE ONE AT POINT PINOS BUT NOT WHAT APPEARS ON OLD PHOTOGRAPHS OF POINT LOMA. National Park Service photograph by H. G. Law

Historical photographs of the Old Point Loma Lighthouse show a different configuration for the lantern cornice than what is existing. The existing cornice with lions heads appears to be a replica of what exists at Point Pinos Lighthouse. All of the metal work on the lantern at Point Loma, except for the structural framing, was manufactured during the 1935 restoration. The existing cornice brackets at Point Pinos are made of a copper alloy (brass). The deteriorated Iron cornice brackets at Point Loma should be replaced with ones of a copper alloy.

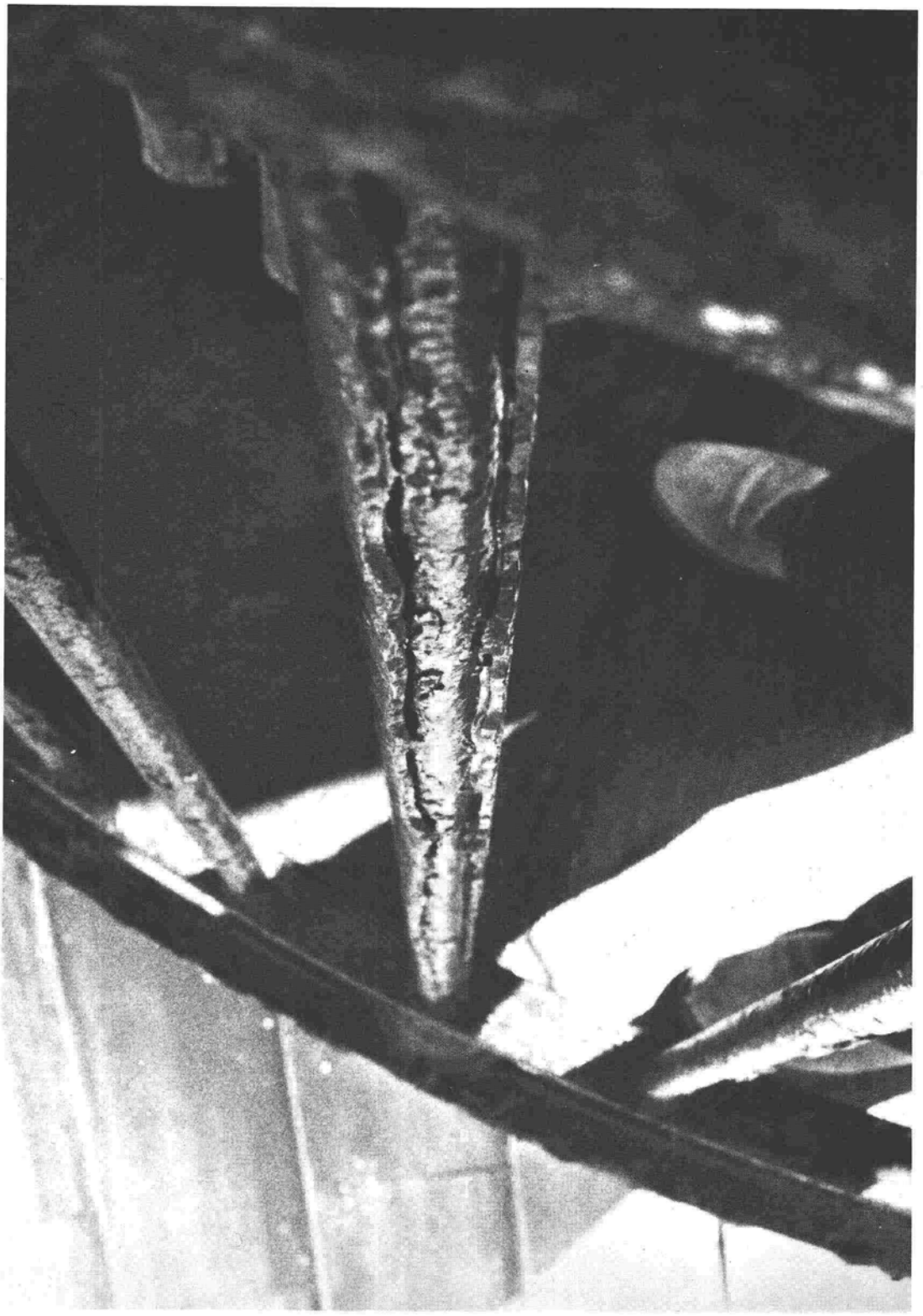
The gallery portion of the lantern has been of some concern in the past due to rusted pieces of metal falling off. The railing around the gallery has weathered badly on the western side. Each of the ten posts around the gallery is a solid iron rod encased in an iron pipe. These are of a larger diameter than the eight solid iron vertical paling rods between each post. Portions of the railing are badly deteriorated. Some of the posts and palings should be replaced. Many of the ball caps at the top of the posts have corroded where they join the railing, and need replacement.

The cast iron deck of the gallery is in fair condition. The top surface shows signs of surface corrosion, but has not deteriorated greatly. The space between each section of decking has been caulked and painted to prevent moisture from being trapped on top of the gallery brackets. There is some heavier corrosion on the western edge of the deck. This is not serious as long as it is properly taken care of. It should be thoroughly cleaned and repainted. The bottom surface is blistering and in immediate need of preservation measures (cleaning and repainting).

The gallery brackets are in fair condition with the exception of the ones exposed to western weathering. Although these have been subjected to heavy corrosion, they still possess



OLD POINT LOMA LIGHTHOUSE, DETAIL OF TOWER SHOWING CORRODED CONDITION OF THE GALLERY DECK.
National Park Service Photograph, Cabrillo National Monument, 1977.



OLD POINT LOMA LIGHTHOUSE, DETAIL OF GALLERY POST SHOWING DETERIORATED CONDITION OF THE IRON PIPE, 1977. National Park Service photograph by H. G. Law.

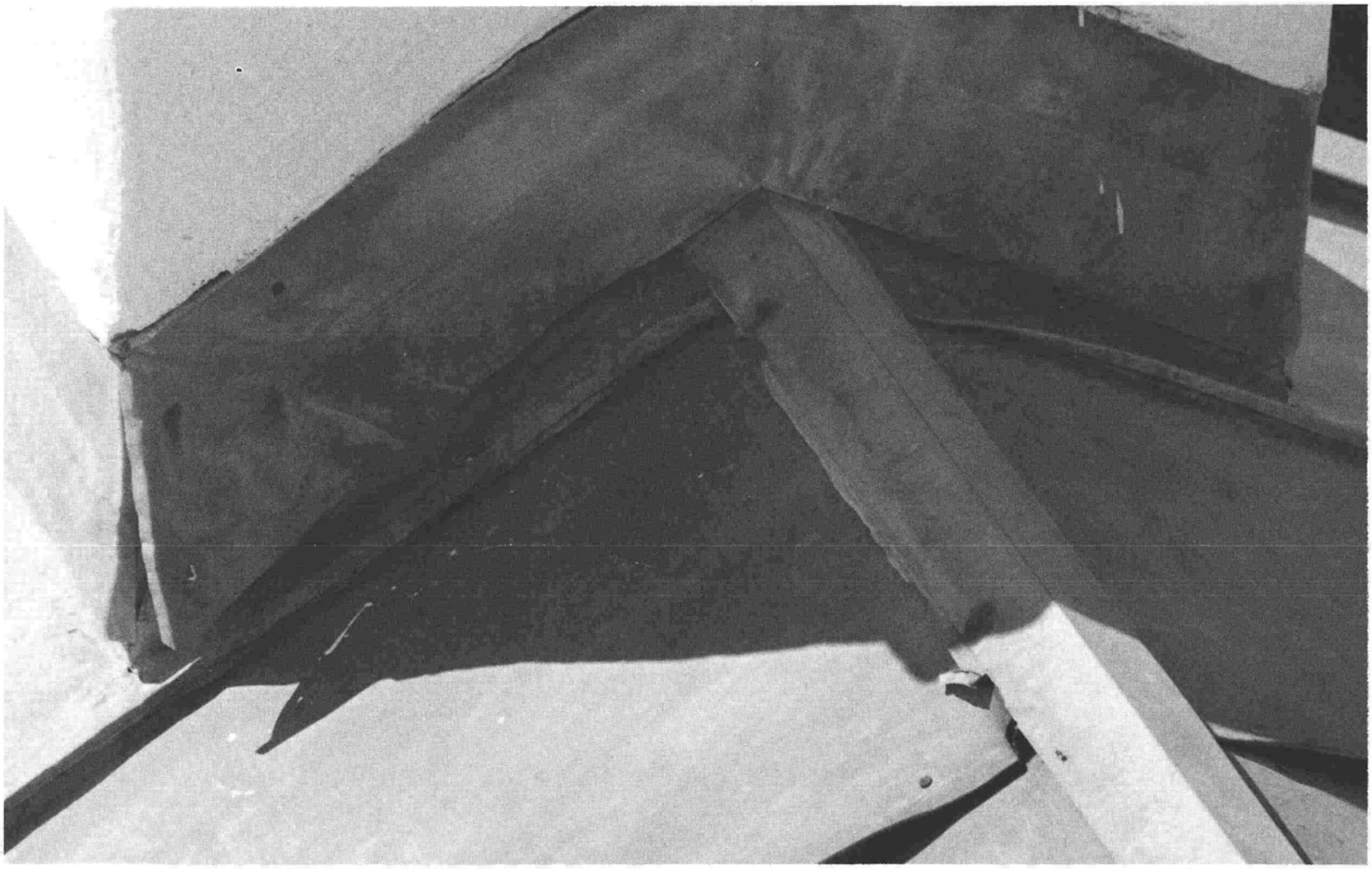
OLD POINT LOMA LIGHTHOUSE, DETAIL OF STANDING SEAM ON THE EXISTING COPPER ROOF, 1977. NOTE CAULKING IN CRACKED SEAM
National Park Service photograph by H. G. Law

structural integrity and are original fabric. These should be thoroughly cleaned of rust and repainted.

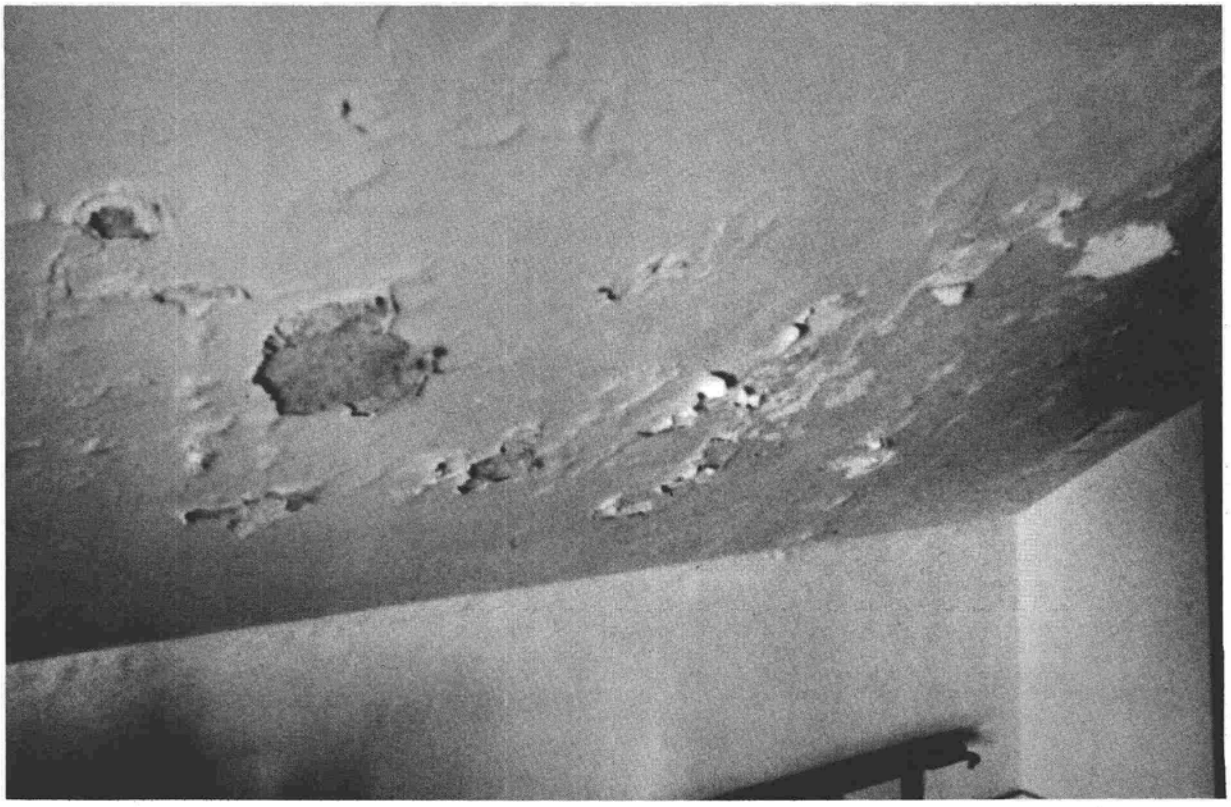
Some of the other minor problems of the lantern exist on the roof. The iron ladder attached to the roof is corroded. The aircraft light, which is supported with a bracket holding the conduit and connected to the lightning rod, has a lot of corrosion on the portion of conduit exposed to the weather.

The roof structure of the dwelling appears to be in fair condition, but the roofing surface is in poor condition. The roofing is copper with standing seams running parallel to the slope. A few holes are visable in the roofing. The maintenance staff has caulked a crack in one of the seams. Many of the nails have rusted and some are missing, leaving holes. The flashing around the chimneys appears to be in poor condition, and the flashing around the tower is likely to be in poor condition as well. The condition of the roofing is one cause of the moisture problems in the second story rooms.

The second story ceilings show signs of moisture damage in the plaster. The moisture sources are probably a combination of two different conditions. One of these is the probable roof leakage, and the other is condensation of air moisture due to the lack of air circulation in the roof structure. The only visible means of circulation of air between the roof and ceiling are two vents in the ceiling connecting the roof structural space with the rooms. There is no ventilation to the outside. The existing vents are located on the opposite sides of the rooms at the lower portion of the ceiling and at the same level. The rooms are also somewhat limited in circulation by being closed off from the rest of the building. The doors and windows are kept closed.



OLD POINT LOMA LIGHTHOUSE, EXISTING FLASHING DETAIL ON ONE OF THE CHIMNEYS, 1977. NOTE THE CONDITION OF THE ROOFING. National Park Service photograph by H. G. Law



OLD POINT LOMA LIGHTHOUSE, SECOND STORY CEILING OF THE DWELLING, 1979. NOTE DETERIORATED CONDITION OF THE PLASTER. National Park Service photograph by H. G. Law

After removing one of the ceiling vents, the roof decking could be seen between the joists. It appears to be 1 X 6 tongue and groove, which is what was specified in the 1935 contract documents. Moisture staining appeared on some of the decking.

At Point Pinos later additions have been built around the lean-to. The earlier wood shingle roof of the lean-to was left intact in the attic space. The roof decking under the shingles consists of 1 X 6 boards spaced approximately ½ inch apart. The shingles measured approximately 15½ inches with a 4¼-inch exposure.

Early photographs of Point Loma Lighthouse show at least two different shingle roofs on the dwelling. It is easy to determine which of the two is earlier with respect to the condition of the lantern. The earlier photograph (page 80) shows a shingle exposure approximating what is existing on the early lean-to roof at Point Pinos. The later photograph shows fewer rows of shingles, making the exposure approximately 5 inches. The detail of the ridge in early photographs appears as though it may be the same as that which existed on the dwellings at the new Point Loma Lighhouse shortly after its completion (see photographs pages 59 and 75), and which exist today (see photograph page 171).

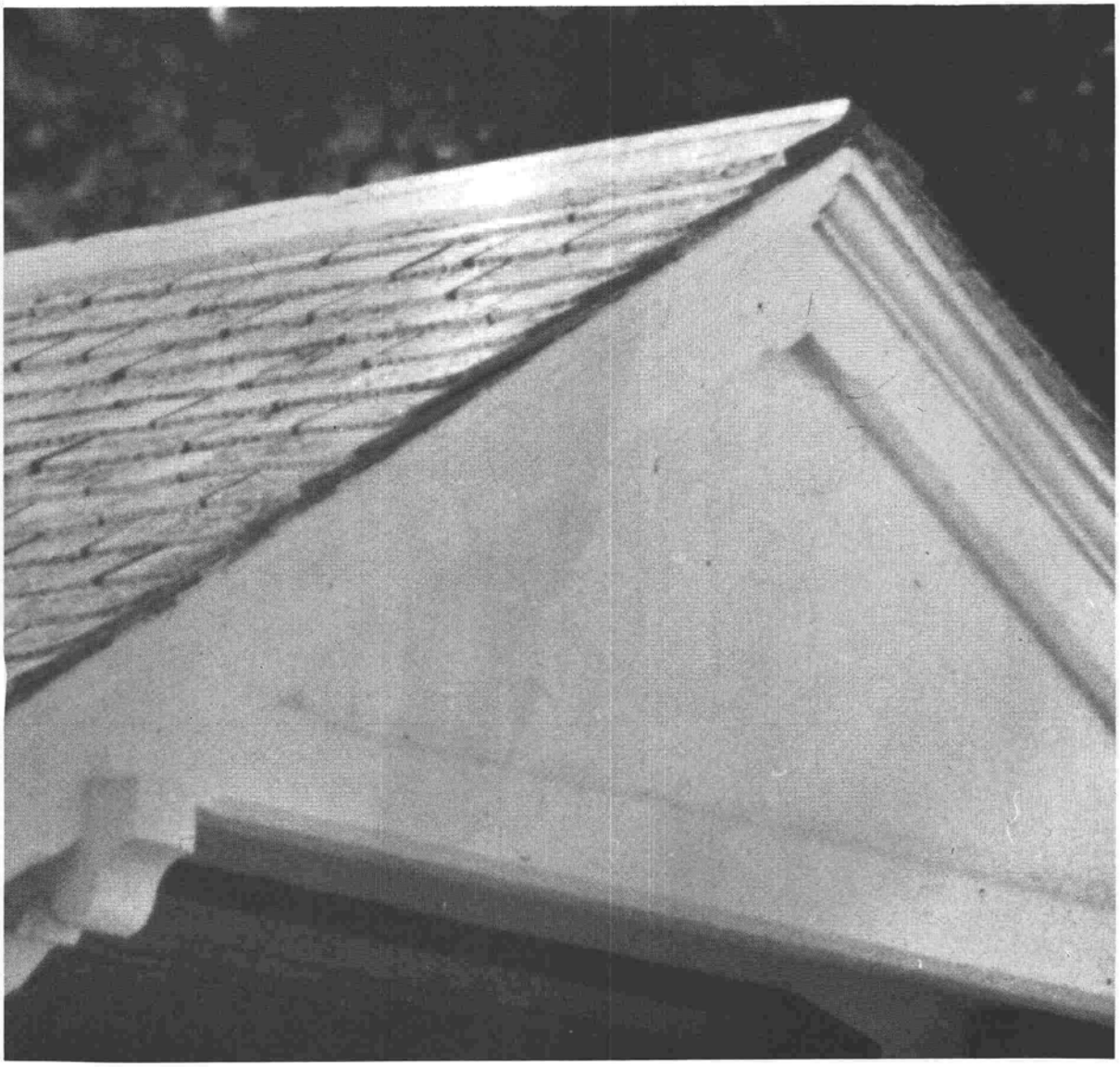
The basement has had moisture problems for a number of years. During the 1930s restoration, the level of the basement floor was lowered approximately six inches to make more head room. Shortly after the restoration, a sheet of drawings were submitted for improvements to the structure in 1936 (drawing CAB 8501). Among other improvements the drawings called for waterproofing the basement walls and installing a farm tile drain at the exterior base of the wall.

Again in 1972, another drawing (342/80001) was submitted, calling for a similar detail at the base of the walls. It was noted that there was standing water on the basement floor. These drawings are on file in the Micrographics Division of the National Park Service Denver Service Center.

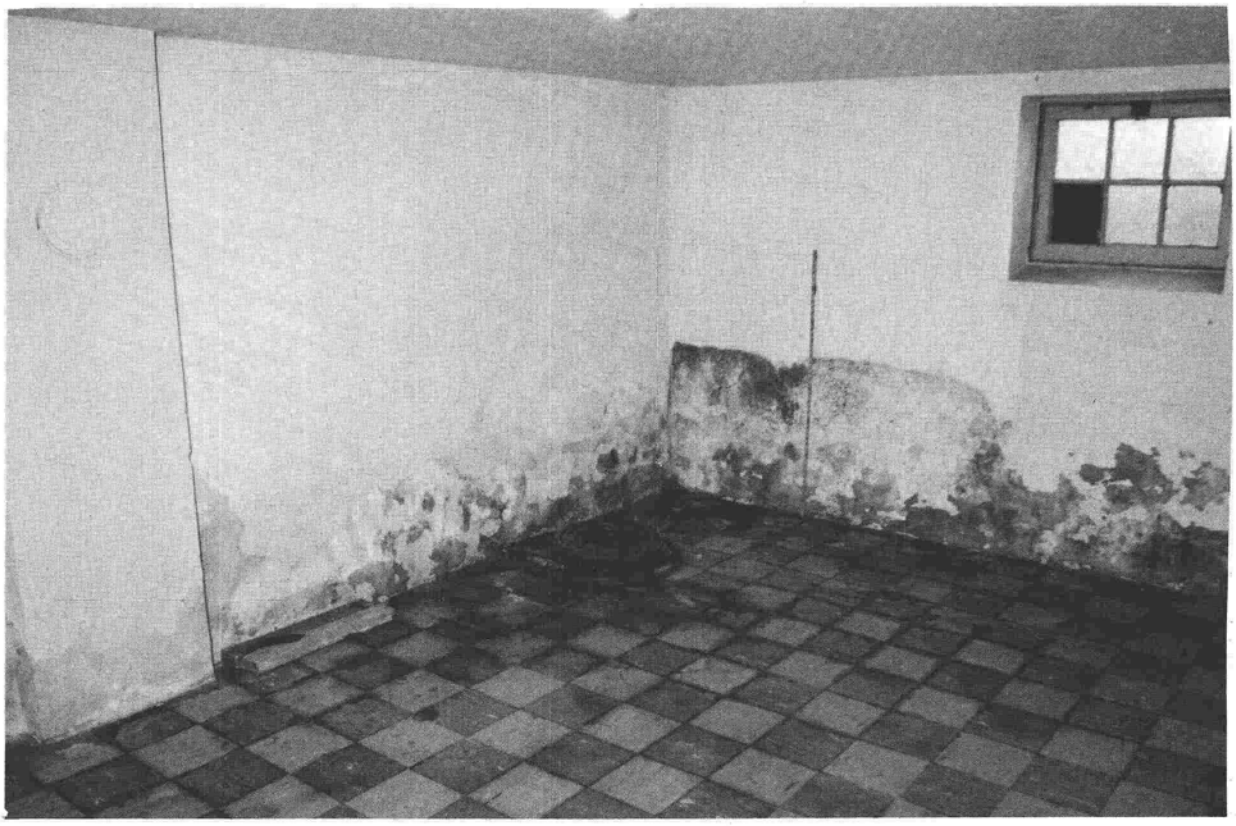
The same moisture problem exists today. It is not known whether either of these details were completed. It is obvious that if a drain and waterproofing exist, they are not functioning properly. Two years ago there was standing water on the northeast portion of the basement floor. The interior surface of the walls were laden with condensation. Since then the moisture appears to have lessened. This is partly due to the removal of vegetation at the perimeter of the structure that had required regular watering. The other reason may be the lack of rainfall since the vegetation was removed. Around the area of floor space that had water on it, the wall surfaces had been moisture damaged. The damaged area of the wall surfaces corresponds with the level of the ground on the exterior of the structure. Above grade there is little damage from moisture. It appears that one source of water entry is by direct capillary flow through the masonry and possibly the floor.

The amount of standing water in the basement contributes to the already moist atmosphere. The high humidity content is likely the problem with condensation appearing on other surfaces in the basement. The stairwell within the tower structure below the first floor at the basement level has condensation on all surfaces. These walls are not outside walls. The paint is in poor condition due to the moisture and is blistering and falling off.

There is an electrical outlet at the base of a partition that is in danger of coming into contact with the water on the



RIDGE DETAIL ON ROOF OF ONE OF THE DWELLINGS AT THE NEW POINT LOMA LIGHTHOUSE, 1979. National Park Service photograph by H. G. Law.



OLD POINT LOMA LIGHTHOUSE, NORTH EAST CORNER OF THE BASEMENT SHOWING MOISTURE DAMAGED WALLS, 1977. National Park Service photograph by H. G. Law

POINT PINOS LIGHTHOUSE, EAST (REAR) ELEVATION, 1979. NOTE STONE FOUNDATION WHERE ORIGINAL LEAN-TO WOULD HAVE BEEN. THE EARLY SHINGLE ROOF OF THE LEAN-TO EXISTS INTACT UNDER THE LARGER EXISTING LEAN-TO ROOF. National Park Service photograph by H. G. Law

floor, if the water is allowed to rise. The conduit leading to this outlet is connected to the moist wall by conduit clamps. The clamps are badly corroded due to the moisture.

The existing paint on the exterior of the dwelling is blistering in several areas. There seems to be a build-up of salts under the paint. This is probably due to the lack of breathability and the paint acting like a moisture barrier. This condition could eventually cause damage to the masonry.

The specifications for the existing paint called for a primer called Frazee Primer M-16 metal prime (with toluene solvent) and a finish coat of Frazee Paint ARD Plate Gloss Enamel AE 402G. Consultation wih the paint manufactuer determined that the paint is a moisture barrier. Any attempt to remove the paint should not include chemicals such as chlorides, sulfides, or nitrates, as these may be extremely damaging to the masonry. All of the existing paint will eventually blister and come off.

The exterior of the masonry should be painted with a whitewash, which would be breathable and not harmful to the masonry. Whitewash will not adhere to the existing paint. The best and safest way to take care of repainting is to carry it out through a careful maintenance program. When an area of existing paint blisters, it should be hand cleaned with bristle brushes (not wire brushes). The area can then be painted with white wash.

The whitewash will wash off with water in areas where it is painted over existing paint. Therefore, the structure will have a patch work of two different coverings for a long period of time. Once all the masonry is coated with whitewash, it will require repainting more often than with conventional paints. This will be an extra burden on the maintenance crew but it is the best and safest way to preserve the stone masonry.

The front door to the dwelling appears to have some moisture damage. The lower rail and stiles have warped and split leaving possible leakage gaps around the sill. Although not as high a priority for repair, the condition of the door and sill can only get worse, and this is a minor work item in terms of expense.

There are several other problems with the various conditions of different elements of the historic structure. The conditions described previously are those needing more immediate attention to stabilize and preserve the structure. However, several items listed in the originating Form 10-238 are not of a nature requiring immediate attention. Some of these items have been taken care of or the policy concerning them has changed since the 10-238 was written in 1972.

Replacement of the flooring throughout the structure was one of these items. The flooring, although not of the same material as the original, does not need replacement at this time. There exists a lot of wear on the sections exposed to the daily visitor. These areas have been carpeted to stop further wear to the flooring. The carpet now shows signs of wear but will not need replacement for some time yet. When the existing flooring is no longer useful it should be replaced with material like what existed originally.

Painting the interior and replacement of electrical wiring and fixtures are some of the other items listed on the 10-238 which are not considered as immediate needs. The interior looks as though it has no immediate need for repainting except the second story ceilings, once the moisture and plaster problems are seen to. The electrical wiring has been worked on since the 10-238 was written and seems to be in fair condition except where mentioned earlier.

The kitchen lean-to, although not appearing on its exterior as it did originally, is in no immediate need of repair or rebuilding. It appears to be in good condition.

An effort is currently being made by the Monument staff, by the Regional Historian, and by the Chief of Cultural Resources Management Division, Washington Office, to obtain the proper type of third order lens for emplacement in the lantern. If such a lens can be obtained, it will be used to replace the lens currently in place which is historically the incorrect size. Because of the size of the third order lens and the difficulty of its installation, it should be installed during the stabilization project as it may be necessary to move some of its components into the lantern through panels from which the glass and iron plates have been temporarily removed. This can be done most economically when these panels are open during stabilization of the lantern structure.

C. Alternatives For Treatment

This section is divided into different areas of the structure needing attention. These areas correspond with the specific problems listed in the existing conditions section. If left untreated, these areas of needed work will cause irreversible damage to the historic structure. These items are put into priority order to help determine funding priority to accomplish the work. The priority of completing these areas of work take into consideration the importance of the elements to the whole structure as well as the immediate chance of damage if left untreated. The following is a list of these work items in priority order: 1. The Lantern; 2. The Roofing and Roof Structure; 3. The Tower Structure; 4. The Second Story Rooms; 5. The Basement; 6. Miscellaneous Work Items. Each of these work items appear in the text in priority order and are divided into alternative treatments. The alternative treatments are discussed in terms of effect on the historic structure. One of the alternatives in each work item is recommended.

The following is a table summarizing and listing the needed work items, recommended treatments, estimated cost, and effect on the significance of the historic structure:

	Work Item	Recommended Treatments	Cost Estimate	Effect
1.	Lantern	Restore the Lantern	$ 71,950	Effect
2.	Roof	Reroof with Shingles	$ 19,260	Effect
3.	Tower Structure	Monitor Cracks	$ 3,500	Effect
4.	Second Story Rooms	Patch Damaged Plaster	$ 4,900	Effect
5.	Basement	Dampproof Basement	$ 5,600	Effect
6.	Miscellaneous Work	Repair Front Door and Remove Electrical Outlet and Connecting Conduit	$ 1,790	Effect
		Force Account	$ 5,000	
		Total	$112,000	

For an explanation of Effect see Evaluation of Effect of the Recommended Treatment section, page 189.

1. The Lantern: This particular portion of the structure has suffered more from neglect than any other part of the lighthouse. This is one of the most critical elements of the lighthouse in terms of preservation. This is due to the great amounts of metal exposed to the moist salt air. The following alternative treatments are involved with the preservation of the lantern portion of the lighthouse:

Alternative a: No Treatment: This alternative includes no corrective measures. If left untreated much of the historic fabric will deteriorate further. (Adverse Effect)

Alternative b: Stabilize the Condition of the Lantern: The condition of the lantern is never thoroughly stable. The park took emergency measures short of replacing deteriorated fabric

to stabilize the structure. However there are several elements that are deteriorated to a point where they are a threat to the rest of the parts of the lantern. Many of these elements should be restored. If left in their present condition there will be more loss of historic fabric. In this case stabilization is not enough to prevent an adverse effect. (Adverse Effect)

Alternative c: Restore the Lantern: This would be the best alternative for the preservation of the lantern and it is recommended. This alternative calls for the replacement of fabric, of which only a small amount is historic. Of the lantern elements only the wrought iron framing members (astragals and purlins) and the base gutters are of original fabric dating back to the construction of the lighthouse in 1854. The astragals are of the utmost importance to the integrity of the lantern. There are several elements in contact with the astragals that are deteriorated from corrosion and causing corrosion on the astragals. The base gutters are deteriorated at the ends where they meet the astragals. These base gutters should be removed, cleaned, and cataloged for collection and replaced with ones of like material and shape.

Active lighthouses were maintained on a daily basis (chipping, cleaning, repainting, and polishing bright work) by the keepers. Once restoration measures are completed, the important job of maintenance begins. There is need for a Historic Structure Preservation Guide written to help set up a daily maintenance program. Precautions should be taken to coat properly the metals for protection. But to keep the condition of the lantern from falling into disrepair again, it is of the utmost importance to keep these metals well protected in the future. The following steps are involved in completing this alternative:

(1) Remove brass cleats holding window glazing and iron panels in place, and clean before reassembling.

(2) Remove glazing and iron panels.

(3) Remove cast iron mullions.

(4) Remove upper transom gutter.

(5) Remove window sill/gutter/ventilators.

(6) Remove cast iron base gutters and catalog for collection.

(7) Clean astragals of all corrosion and repaint them.

(8) Replace cast iron mullions with cast brass. Insert closed cell neoprene between brass and iron, cut to fit flush when assembled to prevent any areas of moisture collection.

(9) Replace existing transom gutters with ones of cast brass. Insert closed cell neoprene between brass and iron, cut to fit flush when assembled.

(10) Replace existing window sill/gutter/ventilators and shutters with ones of cast brass. Insert closed cell neoprene between brass and iron, cut to fit flush when assembled.

(11) Replace cast iron base gutters with manufactured replicas.

(12) Replace all cast iron panels with manufactured replicas.

(13) Replace existing door with newly manufactured door according to the restoration drawings of 1935, using existing hinges.

(14) Reglaze the windows and reassemble the brass cleats.

(15) Completely clean corrosion off the ladder on the roof and repaint it.

(16) Clean tar and corrosion off roof gutter and resolder all the joints.

(17) Rewire the aircraft light with a more corrosive resistant conduit.

(18) Replace all upper cornice brackets above the gutter on the roof, including the connecting rods with brass.

(19) Replace the missing brass cleats on the cornice.

(20) Replace the deteriorated posts and ball caps on the gallery railing.

(21) Remove corrosion from gallery and railing.

(22) Repaint where needed after steps 1 through 21 have been completed (approximately 90% of metal).

2. The Roofing and Roof Structure: This portion deals primarily with the apparent holes in the roofing and the moisture problem of the second floor ceilings.

Alternative a: No Treatment: This alternative includes no corrective measures. If this problem area is left untreated, there exists the danger of further moisture damage in the second story rooms as well as the structural members of the roof being open to deterioration from rot. When this building was restored in 1935, the roof was entirely reconstructed. The roof was then found to be deteriorated from rot and termites, and members were replaced. (Adverse Effect)

Alternative b: Patch the Existing Roofing: This alternative appears to be the most immediate solution for the existing moisture problem of the roof. However, the cost of patching the metal roof is estimated to be more costly than reroofing with wood shingles. Wood shingles were on the structure during its active life as a lighthouse. The existing roofing was installed by the National Park Service during the 1935 restoration, and it is not historically accurate. (Effect)

Alternative c: Reroof the Dwelling: The roofing should be replaced with shingles to match the appearance of the historic period. The existing roof was constructed in 1935 after it was found that the existing rafters at that time were deteriorated. The rafters were replaced with members of like size. However, the roofing used was not the same as that which existed during the active life of the lighthouse. During the active period of the lighthouse while the exterior walls were painted white (1887-1891), the roof was apparently shingled and later painted. The investigation at Point Pinos and the appearance in early photographs of Point Loma is evidence that the earlier shingle roof had approximately a 4¼-inch exposure on spaced sheathing. The material used to cap the ridge of the roof appears different at different periods. However, the earliest photographs show that the ridge detail was boards

similar to those existing at the new Point Loma Lighthouse. If, at a later date it is determined incorrect, the ridge detail could be easily changed and at little expense. This alternative is recommended. It would not only put on a more historically correct roofing material but the roof structure under the existing roofing could be investigated for its condition. The new shingle roofing with spaced sheathing would also be more breathable to help eliminate the moisture problems. The color and type of paint used on the shingles is not known at this time. The roof was reported to have been reshingled in 1867 and, in 1880, it was reportedly repainted. The shingles should not be painted until sufficient research and comparative data has been collected to determine the correct color and composition. Generally speaking, wood shingles should not be painted unless it is with a pigmented preservative, such as linseed oil.

Part of the work required on the roof is the replacement of damaged gutters and downspouts. This would include almost all of the gutters. The existing configuration of gutters and downspouts is not historically accurate. When replacing these, they should be installed as near as possible to represent the configuration that is shown in historical photographs taken during the active period of the lighthouse. This would demonstrate the use of the gutters and downspouts in collecting water for the cistern. The following steps are involved in completing this alternative:

(1) Remove the existing roofing and roof decking.

(2) Replace or repair any damaged structural members.

(3) Replace the decking with spaced sheathing (1 x 6 spaced approximately ½ inch).

(4) Reflash around the chimneys and tower.

(5) Reroof with cedar shingles having a 4¼inch exposure.

(6) Replace gutters and downspouts with ones of the historical configuration.

3. The Tower Structure: This has been of the most concern in recent years because of the appearance of exterior cracks on the upper portions of the masonry. However it appears after looking at historical photographs, that many of these cracks have existed for a number of years. Vertical cracks at each gallery bracket and the horizontal crack above the window appear in a photograph taken in 1915 (photo page 89). In 1915 the structure was probably more open to deterioration than any other period. Most of the lantern was deteriorated at that time. In 1935, during restoration, the final construction report called these cracks superficial. However it is not known if the lantern floor cracks existed at that time--these would indicate tension forces on the floor surface forcing the floor to separate. The cause of the floor cracks, when they appeared, and how much they have expanded, is not known. They could be caused by temperature movement or possibly from the weakening of the segmental dome. As described in the existing conditions portion of this report there are several unknowns involved in determining the statics of the dome structure (not knowing the condition of different periods of masonry or the condition of the iron ring). The following alternatives describe treatment concerning this condition:

Alternative a: No Treatment: This alternative involves no corrective measures. If left untreated, the building could continue as it has since 1935. However it is unclear as to how much, if any, the structure has weakened. There exists a possibility that the embedded iron ring has been rusting due to moisture entering the masonry from the cracks in the lantern floor. (Adverse Effect)

Alternative b: Investigate the Condition of the Masonry and Embedded Iron Ring: The masonry appears to be in good condition except for the cracks. However the material composition of the masonry is not known, i.e., just what kind of brick and mortar was used originally as well as any replacement materials. The major concern here would be if the early brick and mortar is of different composition than the later replacement brick and mortar. This could be a problem with different temperature expansion coefficients of different materials. This difference of materials as well as age makes it difficult to determine the maximum loading the masonry will take without failure. Given the unknown condition of the embedded iron ring and masonry, it is not possible to anaylze thoroughly the statics of the structure. Investigation of the iron ring could be accomplished at different levels, depending on the amount of disturbance to the historic fabric.

The embedded iron ring could be spot checked at different intervals by removing portions of the masonry. This would not be a thorough enough investigation to warrant disturbance to the historic fabric. (Adverse Affect)

Alternative c: Monitor the Cracks in the Lantern Floor and Tower: Prior to prescribing treatment of the tower structure

it is first recommended that the cracks in the tower and lantern floor be monitored to determine if there is a tendency of the cracks to get larger thus showing that the structure has weakened. Simple monitoring devices were recently applied to the floor cracks. These have yet to show any significant movement. Monitoring the cracks on the exterior will prove to be more difficult, requiring devices of a type that are weatherproof as well as possessing remote reading capabilities. (No Effect)

If in fact the tower floor cracks are enlarging, alternative e should be implemented.

Alternative d: Stabilize the Segmental Dome by Banding the Exterior of the Tower: This alternative could strengthen the structure with minimal effect to the historic fabric. The banding could be designed in such a way that it could be removed leaving no effect. This treatment would be completely reversable. However, with the banding in place the historic appearance of the lighthouse is altered. This could be minimized by painting the banding white to blend with the white of the tower. (Effect)

Alternative e: Stabilize the Segmental Dome from the Interior: This alternative would not disturb the historic appearance. Given the fact that visitors are not allowed to enter the lantern, an effort to tie the structure at the floor level could be made with no effect on the historic scene. However, this would most likely cause some alterations to the historic fabric such as possibly drilling holes into the floor and astragals to enable some sort of support system to tie the structure together. (Effect)

Alternative f: Dismantle and Reconstruct the Tower: This alternative would have to include the dismantling of the lantern structure as well as the tower and reconstructing them both. The major problem with this alternative, besides expense, is the adverse effect of likely removing historic fabric and replacement of many portions of historic fabric with reproductions. (Adverse Effect)

4. Second Story Rooms: The moisture problems described in the existing conditions section could be partly solved with the patching of the roof. However, if the roof were surfaced with wood shingles and the old metal roofing removed, the roof structure would be more breathable. One of the major problems of moisture in these rooms is the lack of air circulation in the space between the roofing and the ceiling. The following alternative treatments deal with this:

Alternative a: No Treatment: This alternative includes no corrective measures. This is recommended until such time that the leakage problems of the roofing can be taken care of first. (No Effect)

Alternative b: Patch and Repaint the Plaster and Change the Position of the Ventilators: This treatment is recommended once the new roof is in place. To help the air circulation, the vents should be moved to the lower portion of the walls where there is adequate space between the plaster and the masonry. Here the space is unobstructed running horizontally the length of the rooms. The new vent grills should be of a similar configuration as those existing at Point Pinos Lighthouse. (Effect)

5. The Basement: The following alternatives deal with the condition of the basement as stated in the existing condition section:

Alternative a: No Treatment: This alternative includes no corrective measures. The basement has continually had moisture problems; however, if allowed to continue, the historic fabric of the sandstone walls could deteriorate to a point where the walls would lose their structural integrity. As long as the great amounts of moisture remain in the basement, a continual maintenance problem will exist with the finish on the walls. With the existing danger of deteriorating historic fabric, this alternative is adverse to the integrity of the historic structure. (Adverse Effect)

Alternative b: Dampproof the Basement: This treatment is recommended and is designed to stop the leakage of water through the basement walls from the outside and rid the basement floor of standing water. The major effect of this alternative will be the changed appearance of the landscape after the vegetation has been removed. However this is not an adverse effect, due to the fact that the existing vegetation is unlike that of the historic period. The following steps are directed at completing this alternative:

(1) Assuming that there is no drain or water proofing on the wall (or what exists does not work properly because of deterioration or improperly located), excavate the damaged portion of the perimeter of the dwelling. This would include the removal of several plants. The excavation should be to a level below the basement floor. (Effect)

(2) During excavation have an archaeologist on site in case archaeological remains are excavated. (No Effect)

(3) Apply dampproofing on the wall portion below grade. (Effect)

(4) Install new perforated drain pipe and backfill around it with gravel and wrap with a permeable fabric to prevent the pipe from clogging. (Effect)

(5) Backfill the rest of the excavated area and relandscape with vegetation similar to that of the historic period. (Effect)

Alternative c: Restore the Basement: There are two alternatives for restoration, both of which include the steps of Alternative B. One would be to restore the basement to the 1887 period, matching the period now represented on the exterior. The other would be to restore it to the condition of the 1930s restoration. In either case these alternatives are not immediate, as the basement is not open to the public. It is not recommended to go to the 1887 period of restoration without sufficient research to minimize conjecture. Restoring the basement to the 1930s appearance would not be accurate to the historic period of the lighthouse. If it is required to open the basement to the public and there is not sufficient funding for research and major restoration, it is recommended that with general maintenance (cleaning and painting, and portions of replastering) the basement could be quite presentable. This work could be completed by the park maintenance staff. (Effect)

6. Miscellaneous Work Items: There are other work items needed that don't fall into any of the previously mentioned areas. There is an electrical outlet in the basement that should be removed as long as the moisture problem exists. It is located in the partition making up the doorway between the north and south rooms, about six inches off the floor. The clamps supporting the conduit leading to this outlet are corroded and in danger of corroding the conduit. This particular conduit should also be removed. (Effect) The front door to the dwelling should be repaired or replaced because of the warped lower stiles and rail. (Effect)

D. Evaluation Of Effect Of The Recommended Treatment For The Old Point Loma Lighthouse

No Effect: No alternative treatment can fully achieve a "no effect" situation, but some alternatives include steps with no effect. These are annotated with "(No Effect)."

No Adverse Effect: All alternatives for treatment except "no treatment" include preservation measures. Generally speaking, no adverse effect is anticipated from these alternatives. They should be beneficial to the fabric. These are annotated as "(Effect)."

Adverse Effect: All alternative treatments have activities with potential adverse effects. Any replacement of historic fabric will be done only to replace fabric deteriorated beyond its usefulness, and to protect any adjacent fabric from the same deterioration. The recommended treatments do not include any reconstruction of missing fabric. They do include stabilization, preservation, and replacement of existing deteriorated fabric as necessary. Any removal or alteration of fabric, isolation of fabric from its environment, introduction of new elements, or neglect of

fabric which will change the character that qualifies the structure for the National Register will be annotated as "(Adverse Effect)."

Mitigating Measures: The preservation measures described in previous sections are intended to increase the life, and the historical, architectural, and interpretive values of the Old Point Loma Lighthouse. The existing deteriorated historic fabric that is removed will be recorded in place before removal, and replaced with new materials matching the original.

APPENDIX A

Keepers and Assistant Keepers of the Old Point Loma Lighthouse

Keepers

Name	Date Appointed	Date Vacated	Salary	Remarks
James P. Keating	Dec. 28, 1854	Feb. 1, 1859	$1,000	Removed
W.C. Wiley	Feb. 1, 1859		1,000	Salary reduced to $800 on Sept. 1, 1859
J.N. Covarrubias	Oct. 9, 1859	March 13, 1860	800	Resigned
Joseph Reiner	March 13, 1860	Nov. 16, 1860	800	Resigned
James P. Keating	Nov. 16, 1860		800	Resigned
W.C. Price	Feb. 16, 1861	Nov. 23, 1867	1,000	
J.D. Jenkins	Nov. 23, 1867	April 24, 1871	1,000	Removed
Isaac Swain	April 24, 1871	May 20, 1871	1,000	Declined
Enos A. Wall	May 20, 1871			
James J. Ferree	March 5, 1872	June 27, 1873	1,000	Resigned
Robert D. Israel	June 27, 1873		1,000	Salary reduced to $800 on Jan. 1, 1880
George P. Brennan	Jan. 29, 1892		800	Keeper of the new Point Loma light

Assistant Keepers

George B. Talman	Jan. 29, 1855	Jan. 29, 1856	650	Resigned
Anthony Genan	Jan. 29, 1855	Jan. 17, 1856	500	2nd assistant position discontinued
Julius Samen	April 28, 1856		650	Salary reduced to $500 on Sept. 1, 1859
W.C. Price			500	Resigned
Thomas Susk	Dec. 6, 1859	Dec. 31, 1859	500	Resigned
J.J. Serano	Dec. 30, 1859	March 13, 1860	500	
W.C. Price	March 13, 1860		500	
S. Fields	Feb. 16, 1861		500	
C.P. McAleer	March 7, 1865		625	
Lewis McCoy	Feb. 5, 1867	Nov. 23, 1867	600	Resigned
Eliza Jenkins	Nov. 23, 1867	May 20, 1871	600	Removed
Robert D. Israel	May 20, 1871	June 27, 1873	600	Promoted
Mary A. Israel	June 27, 1873	Feb. 15, 1876	625	Removed
A.G. Walker	Feb. 15, 1876	May 19, 1876	625	Transferred
J.S. Craig	May 19, 1876	Aug. 13, 1877	625	Resigned

Assistant Keepers (continued)

Name	Date Appointed	Date Vacated	Salary	Remarks
John Stone	Aug. 13, 1877	July 30, 1881	625	Salary reduced to $600 on Jan. 18, 1880. Resigned
Victor H. Richet	July 30, 1881	Nov. 14, 1883	$ 600	Resigned
James Maloney	Nov. 14, 1883	Sept. 15, 1884	600	Resigned
Philip Savage	Sept. 15, 1884	Aug. 14, 1886	600	Resigned
David R. Splaine	Aug. 14, 1886	April 15, 1889	600	Transferred on Dec. 14, 1894 appointed Keeper Ballast Point light
Thomas W. Anderson	July 15, 1889	Oct. 25, 1891	600	Resigned
Haydon B. Cartwell	Oct. 28, 1891	Feb. 23, 1894	600	Resigned

The above list was compiled from the following records in the National Archives:

"Record of Lights, Keeper's Names, &c" v.1
"Record of Lights, Keeper's Names, Birthplace, Whence Appointed, Annual Salary, &c." v. 1A, 1853-1870
"Lighthouse Appointments, 1843-1850, Treasury Department," v.2
"Keepers of Light Stations, 1864-1886," no. 3, Division of Appointments, Secretary of the Treasury."
"Keepers of Light Stations, Dist. 5-13, 1862-1900, Division of Appointments, Secretary of the Treasury."
"Keepers of Light Stations, Division of Appointments, Office of the Secretary of the Treasury," Series V, vol. 6.

APPENDIX B

SPECIFICATIONS AND MEMORANDUM OF CONTRACT, 1851

Specifications

For a Light-house at

to be erected under the direction of appointed for the purpose, agreeably to drawings made by Ammi B. Young, Architect for the same, and in conformity to these specifications.

The building is to be thirty-eight by twenty feet on the outside. The exterior walls of the house are to be constructed in rubble masonry, of the stone of the country, or of hard brick, and the interior walls and walls of the tower of hard brick, all laid in the best hydraulic cement mortar. Under the whole house is a cellar 6 feet deep in the clear, under the flooring joist of entrance story floor.

The cellar exterior walls, and the exterior walls of the building, if of stone, are to be sixteen inches thick; but if of hard brick, only twelve inches thick. The cellar floor is to be paved with the best quality hard paving brick. Doorway to enter cellar from the outside of the building, with steps to go down, a stone curb around it, and bulkhead over it to protect it against storms, &c. There will be two windows, of six lights each, 8 by 10 glass, in the cellar. The walls of the house are to be carried up 9-1/2 feet above top of entrance story floor, when the flooring timbers of the attic flooring will be laid on; then carried up 3 feet to the plates where it will receive the rafters. Chimneys at each end, one of which to have a fire place, the other a hearth and flue, with proper funnel pipe for a cooking stove in the entrance story; one fire-place in one attic chamber, and a funnel pipe for a stove in the other.

The entrance story is divided into two rooms, with an entrance vestibule, stairway, &c., of 8 feet between them. The stairs lead from the entrance vestibule to the attic and lantern; and under them are the stairs leading from the kitchen to the cellar. The space back of the stairway is divided into two closets, one opening to each room, and to be finished with shelves and other necessary conveniences. The attic is divided into two chambers, with the tower and stairway between them. In front of the stairway is a closet opening into it, and in rear are two recesses, one opening into each chamber.

The lower flooring joist are to be 3 by 8 inches, 15 inches apart, and doubled as trimmers, and as trimming joist at the sides of the hearths and other openings; the attic flooring to be the same. The ridge of the roof, to receive the upper end of the rafters, is to be a truss of 7 by 7 inch timber, of sufficient depth and strength to support the roof, and on one side to support the Fog Bell, to be placed there at the side of the tower. The roof is to be rectangular, and have one-third pitch; the rafters are to be covered with good seasoned inch boards, milled, jointed, and matched, and well nailed on. It is to be covered with the best quality of Ladies' slates, laid one-third of an inch less than one-third their length to the weather, nailed on and secured to the boarding by the best copper or composition nails for the purpose. In the centre of the building is to be a circular tower, 8 feet in diameter on the inside, built on a proper foundation, 20 inches wide and 2 feet deep below cellar floor, and up to three feet above the ridge of the house, and there receive a stone coping of one foot rise and ten inches projection, of proper width. Its walls are to be one foot thick, and connected with the outer walls by brick partition walls 8 inches thick. In the walls will be proper openings for doorways, &c., and for one window in front above the roof of 6 lights, 9 by 12 inches. The openings will have to be secured by

arches turned over them, and extra security given to the walls by the insertion of nail plate in joints of the masonry at proper intervals and places. The upper end of the tower, forming a deck for the lantern to rest upon, is to be arched over, leaving a proper sized opening for a scuttle to enter the lantern. The arch is to be a domical arch of twenty inches rise, its thrust to be fully counteracted by an iron bar hoop 1 1/4 inches square, let into the brickwork at a proper height. The arch is to be 8 inches thick at the crown, and the deck is to have a pitch of 6 inches from the centre down to the front edge of the coping or cornice of the tower. The deck is to be covered with 20 ounce copper sheathing, laid on a proper surface, prepared by covering the brick work with boarding 1 1/4 inch thick, nailed to timbers let into the brick work of the tower and secured to it; this boarding to be covered with sheathing paper, thoroughly saturated with, and laid down in, tar. On this the copper sheathing is to be secured in a thorough manner with copper or composition nails; and also to the front edge of the stone coping in tht efficient manner. The scuttle door to be covered with copper sheathing, and made tight and secure.

The tower and chimneys will be collared with lead and properly secured with lead or zinc flashings. There will be three windows in each room of the entrance story, and one in each of the chambers, 12 lights each, of 9 by 12 cylinder glass. The outside door in front will be 3 feet 4 inches by 7 feet 4 inches, 1 1/2 inch thick, four pannels and two frieze lights; the outside door of porch 2 feet 6 inches by 6 feet 6 inches, 1 inch thick, four pannels; and one to closet, 2 feet 4 inches wide, and as high as roof will admit. On the front door will be a lock, and on all the doors good hinges, latches, bolts, and fastenings.

The stairway and cross walls above the cellar are to be plastered on the walls; all the rest of the building above the cellar,

together with the porch, is to be furred, lathed, and plastered, and finished in a decent manner. All the floors are to be laid double, the upper one of southern pine. Stairs of southern pine are to be constructed from the entrance to the lantern, and from the kitchen to the cellar, in a proper manner. There are to be stone steps to the front door, also to the outside door of porch.

Attached to the back of the house is a frame porch, 12 by 10 feet, with a lean-to roof, boarded and slated. The floor is 8 inches below floor of entrance story, and the room 7 feet high. There is to be one window, 12 lights, 8 by 10 glass. It is to have a proper sink, shelves, &c. There are to be gutters to all the eaves, with trunks to lead the water into the cisterns. All the woodwork of the house, except, the floors, to be painted--three coats best quality of paint; floors and stairs oiled with linseed oil.

On the top of the tower is to be a wrought iron lantern, sufficient in height and diameter to contain six lights in each octagon 16 by 24 inches, and two copper panes 12 by 16 inces. In four of the copper panes ventilators are to be constructed to admit the air when required, and to keep out the water. There are to be lantern ports 1 1/2 inch square to run down through the deck and arch, and be tightly secured by bolts to the inside of the tower. To these are secured, in a proper manner, the iron sash with rebates of three-fourths of an inch in depth. A door, 2 by 4 feet, is to be made on one side of the octagon, and which is to be glased and partly covered with copper, if required, and made to shut tight into rebates, having two strong turn buttons and handle. The top of the lantern is a dome formed by 16 rafters of iron, concentrating into an iron hoop 12 inches diameter, 5 inches wide, and one-half inch thick at top, and at the bottom secured to top rail of lantern, which is covered with 32 ounce copper, coming down and riveting to the top rail of lantern or the sashes, which is

3 inches wide, and forms a favorable termination to it. On the top of this dome is a traversing ventilator and vane, covered with copper; ventilator 15 inches diameter, 20 inches high; vane 30 inches long, 12 inches wide. Around the lantern are to be eight iron railing posts, 1 1/8 square, standing off 22 inches from the outside of the post of the lantern; the lower end to be fastened securely to the deck, and at the top secured to the post of the lantern. Two railings, three-fourths inch round iron, are to go quite around through these posts. Across the base of the dome is to be an iron bar one inch square, riveted to the upper bar of sash. The lantern to be glazed with best French, Paris made, plate glass, one-fourth of an inch thick; no pane less than three-sixteenths of an inch thick to be allowed to be put in. On one side of the tower is to be a good fog bell, with its proper fixtures complete. Bell to weigh 700 lbs., and to be of as sharp a tone as possible. The lantern is to be painted three coats black outside, and white inside. A copper electrical rod, five-eights of an inch diameter, is to run up two feet above vane, and from thence down to, and two feet into, the ground. To construct an outhouse five by four feet, the walls to be inch boards, milled, jointed, and matched, the roof boarded and shingled. The inside finished with proper seats, door, &c. A brick cistern is to be constructed in the cellar, to hold one thousand gallons, the walls and bottom of which are to be one foot thick, had in cement mortar of best quality, and plastered on the inside with the same, and finished with proper pump and pipes leading to the sink. The whole to be done in a good, workmanlike manner, of best materials, and in every particular to the satisfaction and approval of the commissioner appointed to build the same, or any person whom he may appoint for that purpose.

Memorandum of Contract

Memorandum of a contract made this 28th day of December in the year one thousand eight hundred and fifty one between John McGinnis is of the City of Washington of the first part and William L. Hodge Acting Secretary of the Treasury of the United States for and on behalf of the United Sates of the second part.

Where as by an Act of Congress approved September 28th - 1850 there was appropriated for a lighthouse at Alcatras Island for a lighthouse at Point Conception and a fog signal - for a lighthouse at Battery Point entrance of the Bay of San Francisco, for a lighthouse at San Diego - for a lighthouse and fog signal at Monterey - for a lighthouse at Faralones off the Harbor of San Francisco and a fog signal in the State of California - and for the transportation errection and placing the same the sum of ninety thousand dollars. And by Act of 3d March 1851 for a lighthouse at Humboldt Harbor in said State of California the sum of fifteen thousand dollars, and by both of said Acts for a lighthouse and fog signal at Cape Disappointment in the Territory of Oregon appropriations were also made. And where as the said party of the first part hath undertaken and hereby agrees and contracts to erect the said several lighthouse structures above mentioned at the several points already indicated or to be indicated as the sites thereof by the Officers of the Coast survey of either brick or stone materials as he may elect upon the plans and according to the printed specifications hereto attached except that the best quality of lime and sand mortar may be substituted for cement and in the structure to be erected at Cape Disappointment the tower to be detached from the keepers dwelling as recommended by the report of Lieut. A. M. Harrison and that the heaviest description of tin prepared and painted in the best mode be substitued for slate in the construction of the roofs of the several structures and to finish and complete the same on or before the 1st day of November 1853.

And the said party of the first part doth hereby further covenant and agree with the said party of the second part to fix up the lanterns of the said several lighthouses to be erected by him under this agreement in the following manner and according to the several modes herein particularly referred to that is to say the lantern of the lighthouse at Faralones Island to show a revolving light of red and white shades and to be filled with fourteen of the improved lamps now in use and fourteen best quality new sixteen inch parabolic reflectors on each of two sides of the square said reflectors to be founded upon a die and placed with said lamps upon an oblong square seven on each side in two tiers in the same manner and in all respects similar to the illuminating apparatus of the Fire Island lighthouse in New York.

The illuminating apparatus of the lighthouse to be erected at Point Conception to be in all respects similar to that to be erected at Faralones Island above described with the exception that it is to exhibit a revolving white light instead of red and white shades as shown in the Fire Island light.

The illuminating apparatus of the lanterns of the lighthouses to be erected at San Diego, Monterey Battery Point and Humboldt Harbor to be fixed and to consist of twelve lamps and twelve sixteen inch parabolic reflectors to be placed and filled in all respects similar to that of the Libby Island light in the State of Maine.

The illuminating apparatus of the Lighthouse to be erected at Alcatraz Island to be stationary and to consist of eight sixteen inch parabolic reflectors arranged in all respects on the plan of that in the lighthouse at Stonington in the State of Connecticut.

The illuminating apparatus of the lighthouse to be erected at Cape Disappointment to be a revolving light and to consist of fifteen lamps and fifteen sixteen inch parabolic reflectors similar in all aspects to the light at Cape May, New Jersey.

And the said party of the first part doth further agree to furnish and provide for each of the several lighthouses to be erected under this contract two extra lamps and twenty four screw caps for each lighthouse - five double tin oil butts to contain ninety gallons each - three gallon oil measure - a lantern canister and trivit - a tin wick and tube box - a hand lantern and lamp - two pairs of scissors - two files - six wick formers - a glaziers diamond - a pair of cutting nippers plyers wick trimmer, three buffskins and one pound tripoli powder. These articles to be of the kind and quality in actual use in the several lighthouses in the United States. The reflector lamps and other fixtures and affects to be furnished under this agreement are to be of the most approved quality of American manufacture now in use in the several lighthouses of the United States.

And it is further understood and agreed that the said party of the first part is to use the best hydraulic current in the construction of the several cisterns required by this contract and that each of said lighthouse structures should be at least one hundred feet from the top of the lantern to the water, and that he the said party of the first part will fully complete and fit the same and furnish all the requisites for lighting the same herein before enumerated and deliver over to the said party of the second part or to an authorized agent of the Treasury Department the said several structures when thus completed in a state ready for lighting.

And the said William L. Hodge Acting Secretary of the Treasury as aforesaid for and on behalf of the United States as

aforesaid agrees and stipulates that upon the completion of the said several structures according to the subjoined plans and specifications with the exceptions indicated and upon the delivery and setting up of the lighting apparatus according to the terms of this agreement and the inspection and approval assigned by the collector of the district in which any of said structures may be situated or other authorized agent of the Treasury Department to be appointed by the Secretary of the Treasury, he the said party of the second part will cause to be paid to the said party of the first part or his assigns the sum of one hundred and thirty six thousand dollars.

And the said party of the second part for and on behalf of the United States as aforesaid further agrees and stipulates that upon the completion as aforesaid of each of any one or more of said structures according to this agreement, the sum of fifteen thousand dollars is to be paid for each of these on the coast of California and thirty one thousand dollars for that in Oregon with a reservation of twenty per cent on the Oregon lighthouse unless it be the last one completed.

And it is further agreed between the parties to this contract that in consideration of the advances of money to be made by the party of the first part for the illuminating apparatus for the said several lighthouses to be sent from Atlantic ports that as soon as the said illuminating apparatus lantern fixtures fog signals oil vessels and tin are shipped and insured and the policy of insurance is assigned and delivered accompanied by a duplicate of the bill of lading to the said party of the second part and upon the execution and delivery of a personal bond in the sum of seventy five thousand dollars with security to the satisfaction and approval of the siad party of the second part conditioned for the faithful execution of this contract on the part of the said party of the first part he the said party of the second part thereupon pay and

advance to the said party of the first part of his order the sum of twenty five thousand dollars.

And the said party of the second part further agrees and stipulates that in case a Revenue Cutter or other Public Vessel of the United States should be proceeding to the Pacific coast at or about the time said above named illuminating apparatus lantern fixtures fog signal oil vessels and tin are ready for shipment that the same will be taken on board of said vessel and delivered to the Collector at San Francisco free of charge to the said party of the first part and in the event that no such vessel is sent as aforesaid that then and in that case the said party of the second part will be bound to otherwise transport the said articles by other vessel or vessles free of freight to San Francisco and provided further that in case the same is transported by the party of the first part, that the party of the second part will pay therefore the usual and customary cost of the freight thereof.

And its is further agreed and stipulated that the said illuminating apparatus fog signals lantern fixtures oil vessels and other accessories for the use of the said several lighthouses are not to be delivered to the said party of the first part at San Francisco but the same are to remain in the possession of the Collector until delivered at the several points where the same are to be used and to which several places they are to be transported under the authority of said Collector when required by the said party of the first part in a Revenue Cutter of the United States, the said party of the first part being also required to send there with in the said Cutter a competent artisan and a sufficient number of workmen to place said apparatus and fixtures without unnecessary delay in the several towers erected for their receiption. It is to be understood however that in case the said party of the first part shall prefer to ship the said illuminating apparatus lantern fixtures fog signals and

accessories or any part thereof directly to the several points and place the same on the several structures without going to San Francisco, he the said party of the first part shall have the right and privilege to do so.

This further understood, and agreed between the parties hereto that no members of Congress is directly or indirectly by himself or by any other person in trust for him interested in this contract.

In Testimony whereof the said John McGinnis hath hereto subscribed his name and affixed his seal and the said William L. Hodge Acting Secretary of the Treasury as aforsaid for and on behalf of the United States hath subscribed his name and caused the seal of the Treasury Department to be hereto affixed at the City of Washington the date first above written.

S/William L. Hodge
Acting Secretary of the Treasury

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