

**America's Last Seacoast Defenses:
The World War II-Era Construction Programs**
by Mark Berhow

The last American harbor defense construction program was initiated due to concern over troubles in Asia and in Europe during the mid 1930s. New plans for harbor defenses were developed and a few new battery construction projects were begun. The outbreak of war in Europe in September of 1939, however, prompted further action. The Army's Harbor Defense Board prepared a report which surveyed the state of existing defenses and proposed an updated construction program to protect American naval installations and major harbors in the continental United States (CONUS). The Board's report, submitted in July of 1940, proposed to use 16 inch guns and mounts developed in the 1920s in a new casemated battery design as the main armament to defend these harbor locations. In all, the report proposed to build 27 new 16 inch gun batteries, revamp 20 existing 12 inch and 16 inch gun batteries and build 50 new 6 inch gun batteries at 18 locations around the CONUS. The board recommended the abandonment of 128 older Endicott and Taft era batteries after the new program was complete. The new plan was approved in September of 1940 to begin the next fiscal year.

This program, which was later combined with other projects in the CONUS and other programs outside the continental limits, produced a comprehensive set of seacoast fortifications at 33 locations which included harbor defenses located in Hawaii, Alaska, Newfoundland, Panama, Bermuda and at several sites in the Caribbean. Taken together, this was the most extensive and uniform construction program ever undertaken by the United States.

Genesis of the WW II-Era Programs

The main backbone of the seacoast defenses existing in the United States at the beginning of 1940 were those built during the period of roughly 1890-1919 at sites proposed by the Endicott Board Report of 1886 with additional sites, mostly overseas, added by the Taft Board Report of 1906. By 1915, the naval guns in battleships currently being built could effectively outrange all the harbor defense batteries in the United States, even those then being built. In addition, the new naval guns could be fired at higher angles effectively negating the protective advantages of the disappearing carriage on which most of the heavy American harbor defense weapons were mounted. That year the War Department called for the development of a new large caliber 16 inch gun to be mounted on a carriage that would have a greater range than those guns in the existing seacoast defenses. Existing stocks of M1895 and M1895MI 12 inch guns were to be used until the new 16 inch gun could be perfected. A new long range carriage was quickly developed for the 12 inch guns, the barbette carriage Model 1917 (a BCLR for barbette carriage, long range), and 15 new two-gun batteries were built between the years 1917 and 1928. These batteries had protection only for the magazines, the guns were completely exposed and emplaced on circular concrete pads. The guns were considered to be protected by the element of dispersion,

that is each gun was located sufficiently apart from the other gun that the destruction of one would not result in the destruction of the other.

Meanwhile, the 16 inch guns finally reached production with the development of the 50 caliber Model 1919 gun, followed closely by the 16 inch 25 caliber M1920 howitzer. Only one M1919 gun was produced. It was mounted on a Model 1917 disappearing carriage, the largest produced by the United States Army. This DC was the only one with steel shields to prevent damage from rocks and sand. It allowed for the longest range of any American gun in a DC mount. It was emplaced in Battery John M. K. Davis at Fort Michie on Long Island Sound by 1924. Several 16 inch DC batteries were planned about 1920, but only this one battery using the last of the US Army's disappearing carriage guns was actually built.

The other 16 inch guns were to be mounted on new barbette carriages, the M1919 (long range). The construction of the Army guns was very time consuming and expensive. Only 12 of these M1919MII & MIII weapons were built and of these only 6 actually emplaced in batteries at Boston, New York, and on Oahu Island, before a less expensive alternative became available. After a few of the 25 caliber Army 16 inch howitzers were built, work on these weapons was ended. Four M1920 howitzers on M1920 barbette carriages were emplaced during the mid-1920s at Fort Story, Virginia, at the entrance to Chesapeake Bay.

The signing of the Washington Arms Limitation Treaty in 1922 by the United States resulted in the cancellation of the construction of 6 new battleships and 6 new battle cruisers. The Navy had already built seventy 50 caliber MkIIM1 16 inch guns for these ships and it was subsequently decided to release some of these weapons to the Army. The Model 1919 barbette carriage design was modified for the Navy gun and cradle by 1924 and 12 carriages were ordered. Six Navy guns were emplaced in three new batteries, two in Panama during 1924-28 and one on Oahu Island during 1932-34.

In 1923 the General Staff again re-evaluated the existing harbor defenses of the United States. It called for a new program utilizing the 16 inch guns at 18 major American harbors (the same 18 CONUS locations that would eventually be fortified in the 1940 Program). However, funding for the Army was meager during this period, and the only 3 new batteries for the Navy guns mentioned above were actually built before 1935. Harbor defenses not listed in this report were abandoned by 1928. These were the defenses at the mouth of the Kennebec River, Cape Fear River, Port Royal Sound, the mouth of the Savannah River, Tampa Bay, Mobile Bay, and the mouth of the Mississippi River.

The Army continued to make new harbor defense plans during the 1930s. The Army created a Harbor Defense Board in 1930 to evaluate and update harbor defense projects. Concern over the developing use of aircraft and aircraft carriers caused the Army to design 16 inch batteries with substantial overhead cover. The older emplacements looked like bullseyes from the air and had no overhead protection at all. The new design enclosed the gun in a reinforced concrete shell, similar to the old casemates of the early 1800s, but on a larger scale. Plans were also developed for 8 inch and 6 inch gun batteries.

In 1937 funds were authorized for the construction of two new 16 inch batteries at San Francisco. These two batteries were completed in 1940. Two other existing 16 inch batteries were casemated soon after. One 8 inch battery, Battery Strong, was also built at San Diego starting in 1937, similar in design to a 8 inch battery built on Oahu in 1935. The guns of Battery Strong were not casemated but were supposed to receive a protective shield. As it turned out, none of the new 8 inch batteries ever received shields. The 8 inch guns utilized were Navy MkVIM3A2s previously removed from battleships, which were emplaced on Army built M1 long range barbette carriages. These guns were also used in the M1A1 railway carriage.

Additional funds were authorized in late 1940 for the construction of seven more batteries including five new 16" batteries, a 12" casemated battery in Puerto Rico, a casemated 8 inch battery (at Narragansett Bay) and a bombproof magazine for a new 6-inch battery of M1900 guns at Fort Story, Virginia. Except for the 8 inch and 12 inch batteries, these batteries were incorporated into the 1940 Program after its authorization.

Three new modifications of the Model 1919 16 inch carriages were put into production, the M3, M4, and M5, which differed from one another in a number of details. The completed emplacements for guns mounted on these carriages also had frontal shields. Ultimately 6 M1 carriages (serial numbers 7-9, 11-13), 4 M2 carriages (serial numbers 10, 14-16), 2 M3 carriages (serial numbers 17, 18), 27 M4 carriages (serial numbers 19-45) and 16 M5 carriages (serial numbers 48-51 installed, serial numbers 55-59 in storage, and serial numbers 52-54, 60, 61 incomplete) were actually produced.

The Army decided to use the existing stocks of some eighty-five M1903 and M1905 6 inch gun tubes, many removed from 6 inch disappearing batteries during World War I, on new M1 and M2 long range barbette carriage designs as the medium range weapon. The gun tubes were modified and redesignated M1903A2 and M1905A2, respectively. The M2 carriage differed from the M1 in that it had an electrical drive that allowed the carriage to be connected to a remote control panel for elevating the gun. A new 6 inch gun, the (T2)M1, was developed during the war years due to insufficient numbers of the M1903 and M1905 guns and the M1 and M2 carriages were modified slightly to hold them giving rise to the M3 and M4 carriages, respectively.

Implementation of the WW II-Era Programs

Each harbor to be fortified under the construction program was assigned a number of batteries depending on its relative importance and use. Chesapeake Bay was projected to receive a grand total of five new 16 inch batteries (which together with the two existing 16" howitzer batteries would have given the Chesapeake Bay a grand total of seven 16" batteries), New York and San Francisco harbors were projected to have a total of four 16 inch batteries each, including already existing 16 inch batteries. Other harbors were to receive from one to three 16 inch batteries or have existing 16 inch and 12 inch BCLR batteries revamped. Each

protected harbor was to receive 6 inch batteries and a few locations would receive only the 6 inch armament such as Pensacola, Galveston (both of which areas had existing 12 inch armament), Key West and the Columbia River. Later, 12 inch batteries were substituted for two of the 16 inch batteries, one each at the Delaware River and Charleston, South Carolina.

Additional programs integrated into the general construction effort included several other locations outside the CONUS, such as the Island of Oahu and four harbors in Alaska which would receive 8 inch and 6 inch armament. The United States also received new Atlantic and Caribbean Naval bases from the Lend-Lease Agreement signed with Great Britain. The US Naval Station at Argentia, Newfoundland, received two 6 inch batteries. A number of sites in the Caribbean were to receive 16 inch, 12 inch, 8 inch and 6 inch batteries. This last area included projected defenses on Puerto Rico, the Virgin Islands, Bermuda, Trinidad and Jamaica.

Mine fields were still to be an integral part of the defenses at eleven harbors and 16 new mine planters were authorized for construction in 1940. Mines were employed at the Harbor Defenses of Portland, Portsmouth, Boston, Narragansett Bay, New York, Chesapeake Bay, the Delaware, San Francisco, the Columbia, Balboa and Cristobal.

Each proposed battery was assigned a construction number in the CONUS program beginning in late 1940 in order to keep track of things. Usually, gun batteries would receive a name upon nearing completion, but naming was more or less discontinued in 1943 and many of these new batteries were only known by their battery construction numbers (BCNs).

The 16 inch batteries consisted of two casemates 500 feet apart connected by a central traverse magazine (three straight sections in the earlier batteries (for the most part), one long straight corridor in later batteries), two shell rooms and two powder rooms were located off the main corridor on the same level. Each battery had its own power room and dehumidifier equipment located behind the shell rooms and powder rooms. In addition, there were work rooms, store rooms and a latrine. The entire structure was protected by thick concrete walls and a roof topped with a burster course and sand. In the early batteries the burster course was separated from the roof by a layer of sand, but in later batteries the roof and burster course was combined. Each 16-inch battery also had a plotting and switchboard room (PSR), which was a separate structure usually located a few hundred yards behind and to one side of the battery. The 12" casemated batteries were similar in design, but slightly smaller (for instance, the casemates in the 12 inch batteries were 420 feet apart). A number of these batteries had one or both casemates set at angle to increase the field of fire.

The 6 inch batteries were of a similar design, except that the PSR was built into the main structure. These designs were often modified slightly to accommodate the terrain where a particular battery was being built. The new 8 inch batteries were to be essentially similar to the original 8 inch design built at San Diego, but those built at Kodiak, Diamond Head and Kaena were modified for the terrain. Several harbor defenses were also to

have one or more reserve magazines located less than a mile from the batteries to store reserve ammunition for a later battle, and most harbor defenses had to have new housing built for the troops who were to man the guns.

Copies of the drawings for 16 inch Battery Ashburn (BCN 126), the casemated 12 inch Battery Hoskins, 8 inch Battery Strong and 6 inch Battery Humphreys (BCN 238) on the following pages are shown as examples of the layouts of these constructions.

The construction proceeded slowly at first. In the summer of 1941, the construction was deferred on 10 batteries that obviously would not be completed by 1944. By the middle of 1942 only 5 new casemated batteries were ready, including the two San Francisco batteries that were completed before the CONUS program began.

WW II-Era Seacoast Gun Statistics

A- Army gun; H- M1920 Army howitzer; N- Navy gun

	16"A	16"H	16"N	12"A	8"N	6"A	90m	37m
projectile (pounds)	2340	2100	2240	975	260	105	23.5	1.3
range (yards)	49100	24500	45100	30100	33000	27000	19000	8900
max. elevation (degrees)	53	65	47	35	42	47	80	90
muzzle vel. (feet/sec.)	2700	1950	2750	2350	2750	2800	2700	2600
ave. rate of fire (rounds per min.)	1	1	1	2	2	4	22-30	120

Before 1940 most of the Army's existing harbor defenses were on caretaker status. The regular Army Coast Artillery units were mere administrative skeleton units and most of the "regular" coast artillery gun practice was carried out by National Guard regiments and ROTC units during summer field camps. In September of 1940 the Selective Service Act was passed and the Army was infused with new soldiers. Existing Coast Artillery regiments were brought up to strength with new recruits and several new regiments were created. Existing armament at the harbor defenses was manned by late 1941. Mobile weapons had been used since the late 1920s and were maintained at the harbor defenses. Though they were vulnerable to attack by planes, these older weapons were important visual proof that there was some defense against possible invasion. These mobile weapons were also maintained until the new batteries were completed. The declaration of war in December of 1941 changed the slow construction pace. Priority in the 6" program was given to twenty batteries located at outlying bases.

Antiaircraft artillery was the province of the Coast Artillery Corps as well. In 1939, there were only five regular and thirteen National Guard antiaircraft regiments and these were poorly armed and under strength. After 1940, the antiaircraft program of the Coast Artillery Corps was greatly expanded. By the end of the war

this would constitute nearly the Corps' entire function. Barrage balloon units were also created and trained, though few were actually employed-on the west coast, at Sault Ste. Marie, Michigan, and at the Panama Canal.

A third defensive layer was added to the program with the addition of the new M1 90 mm guns to be employed as anti-motor torpedo boat (AMTB) batteries. The original plan was for 127 batteries at the various defended locations. The new guns could be used to destroy small fast craft trying to enter the harbor, to defend mine fields, and serve as antiaircraft weapons. These batteries were composed of two 90 mm guns on M3 shielded fixed carriages, two 90 mm guns on M1A3 mobile carriages and two 37 mm also on mobile carriages at locations around the harbor. Later a newer 40 mm model was also used. The fixed mounts were on simple concrete plugs in the ground. Temporary magazine structures were usually built at the site. The drawing for the AMTB batteries at San Diego is also included as an illustration of this type of battery.

At the beginning of the war, many existing Army and Navy guns were pressed into service as temporary defenses. Some 3 inch M1903 and M1902 pedestal mount guns were relocated as temporary examination batteries, AMTB batteries, and submarine net defense batteries in 1942. Other temporary batteries were built at many locations around the continental United States, Hawaii, Alaska and the Caribbean utilizing 155mm M1918 GPF tractor-drawn guns, 4 inch, 5 inch, 6 inch and 7 inch Navy guns on various pedestal carriages, several M1888 8 inch Army guns on M1918 BC carriages (some mounted on concrete gun blocks, others on M1918M1 railway cars), and twenty nine 8 inch Navy guns mounted on a newly designed M1A1 Army railway carriage.

New fire control stations were also built. The optical position finding system was retained and the base line systems for these new guns were greatly expanded. The 6 inch batteries had from 3 to 5 base end stations, with baselines that connected two, usually adjacent, base end stations to form baselines of a maximum length of 10,000 yards. Some 16 inch batteries had a dozen or more base end stations and a few batteries had sets of fire control baselines that covered nearly 60,000 yards in total. The optical position finding system was to be augmented by the newly developed radar systems which were installed as they were produced. Each 16 inch, 12 inch, 8 inch and 6 inch gun battery was to receive a SCR-296A radar unit and each harbor defense was to receive a SCR-582 radar unit (later replaced by SCR-682) for fire control. The Army and Navy also established the Harbor Entrance Control Post system (HECPs) at all defended harbors, utilized existing structures where possible, or otherwise building new structures. Taken together, the elements that made up a completed WW II-era harbor defense, including batteries, base end and spotting stations, radars, mine field elements, searchlights, housing and maintenance facilities and covered wide areas. A map of the Harbor Defense Elements, Harbor Defenses of San Diego (July 1, 1945) is reproduced on the following two pages, which shows just how extensive these facilities were. A key to the abbreviations used on this map is included at the end of this text.

The concern over the possible invasion of Hawaii resulted in a unique set of seacoast defenses. Due to a lack of immediately available Army weapons, the Army utilized some excess naval turrets in seacoast batteries to protect the shoreline of Oahu Island after December 7, 1941. Eight twin-gun 8 inch turrets, removed from the aircraft carriers *USS Lexington* and *USS Saratoga*, and two-triple gun 14 inch turrets salvaged from the sunken *USS Arizona* were emplaced during the years 1942-1945. Plans were made to emplace the two twin and two triple 14 inch gun turrets from the *USS Oklahoma*, but they never got off the drawing board, as the *Oklahoma* turrets were determined to be too damaged to repair. Some of the new 8 inch and 6 inch Hawaiian batteries were also of a non-standard design tunnelled into the hillsides of Oahu.

WW II Seacoast Defense Construction Slowdown

As the war front shifted away from the United States and concern over possible invasion receded, construction priority was given to other military programs. In September of 1942, the construction of four more 16 inch batteries in the CONUS were deferred (14 total) and 9 of those deferred batteries were canceled outright the following November. Many of the older Endicott and Taft-era (1890-1917) weapons, manned in 1941, were declared obsolete by late 1942 and early 1943 and ordered to be scrapped. The decision was made to suspend manufacturing the new 6 inch (T2)M1 guns in August 1943 leaving 13 of the CONUS 6 inch batteries unarmed and deferred short of completion. Later, production of the 6 inch guns was reinitiated only to be ended by the conclusion of the war. The official curtailment of the CONUS 1940 Program came in January 1944. More battery projects were canceled and others, though partially complete, were deferred, though work continued to completion on a few. In October of 1944 the Coast Artillery Harbor Defense regiments were broken up and the reduction of the manpower used in Harbor Defense duties was begun. After the end of the war in 1945, the future of coast artillery was uncertain. Some deferred batteries were allowed to go to completion. All the older seacoast weapons were to be scrapped. Nineteen 16 inch and forty-eight 6 inch batteries were placed on caretaker status. Of over 150 contemplated batteries only two-thirds were built and many were not armed. By the war's end in 1945 only a few 90 mm gun positions remained manned of all the new existing coastal defense weapons built.

The World War II Construction Program Legacy

The fate of the American seacoast artillery was sealed by the end of the war and the end came quickly. Several harbor defense commands were officially abandoned beginning as early as 1946, the weapons scrapped and the property declared surplus. In 1948 all of the 16 inch guns were declared obsolete and scrapped. By 1950 all remaining harbor defense commands were disbanded and the property either put to other uses or declared surplus. The Coast Artillery Corps was abolished as a separate arm of the Army that same year. Even though a few 6 inch batteries remained armed into 1950s in

connection with possible weapons sales to other countries, the day of the big gun defense was over in America.

The vast majority of the structures built under the CONUS 1940 Program still remain, though some have been destroyed or extensively modified. Many are located on lands that have become public parks, and can be visited by the public—though the interiors of only a very few of those batteries are actually open.

However, only a precious few of the weapons once mounted in these batteries survive. A lone 16 inch MkIIIM1 Navy gun on an Army proof mount, located at the Aberdeen Proving Ground in Maryland, was recently refurbished and moved to a public display location. A few other 16 inch MkII barrels remain; one is displayed on pylons at the Washington Naval Yard and two are at the Naval Surface Warfare Center at Dahlgren, Virginia.

Only six intact shielded 6 inch BCLRs remain. Two are emplaced in Battery 234 at the Fort Pickens unit of the Gulf Islands National Seashore Park near Pensacola, Florida (originally from Battery 227 on Fisherman's Island in Chesapeake Bay), two will soon be emplaced in Battery 246 at Fort Columbia State Park by the State of Washington. The Fort Columbia guns were moved in 1993 from their original position at Battery 281 at what once was Fort McAndrew near Argentia, Newfoundland. Two more shielded guns still remain in their original location in Battery 282 at Argentia. Some parts and sections of the four 8 inch and two 6 inch guns (including the shields) remain at or near Kodiak, Alaska, and two shields and possibly both 6 inch gun tubes remain at Fort Learnard, Dutch Harbor, Alaska.

At least two intact 90 mm guns on fixed mounts remain. One is at Fort Monroe, Virginia (originally from Fishermans Island across Chesapeake Bay), and the other is in front of an Administration building in Shemya, Alaska. Fort Moultrie, South Carolina has a 90 mm gun on a mobile mount sitting atop the parapit of Battery Jasper and a disassembled M3 fixed mount for a 90mm gun (sans gun, also originally from Fishermans Island).

Abbreviations used on the HDSD map are: BTRY- battery, TAC- tactical, BC- battery Commander's station, B- base end station, S- spotting station, SCR- Signal Corps Radio (SCRs 296 and 682 were radars), SL- searchlight, BN-battalion, CP- command post, HDCP- harbor defense command post, HECF- harbor entrance control post, HDOP- harbor defense observation post, SWBD- switchboard.

Fixed Armament in American Harbor Defenses, 1946

Abbreviations are as follows: A = Army gun tube on open barbette mount, N = Navy gun tube on open barbette mount, H = Army howitzers on open barbette mounts, CB = Navy gun tube on barbette mount in casemate, SB = Army gun tube on barbette mount with shield. All batteries consisted of two guns each.

Batteries built prior to 1940 Program

	16"A	16"H	16"N	16"CB	12"B	8"BC
retained ¹ , but not rebuilt	1	2	1	2	2	3
casemated 1941-44	2	-	2	-	10	-
disarmed	-	-	-	-	2	-

New batteries built under 1940 Program

	-----CONUS-----			-----other sites-----				-AMTB-
	16"CB	12"CB	6"SB	16"CB	12"CB	8"BC	6"SB	90mm
planned ²	34	2	51	5	4	9	38	127
built	20	2	49	0	1	8	25	89
armed	14	2	34	0	1	5	16	89

Note-Hawaiian turret batteries and Phillipines 12" batteries are not included in this table.

- 1 The Hawaiian 16" Army gun battery and the two 16" howitzer batteries at Cheasapeake Bay were not casemated, but were modernized with protective shields to retain their 360-degree fire arc. The four howitzers were fitted with their shields, but there is some question as to whether or not the Hawaiian Army gun battery ever received its shields. In Panama, both 16" Navy gun batteries and both 12" batteries were to be casemated but casemating was only carried out on one battery of each type. Three other existing 12 inch batteries were not casemated, one at Galveston and two at the Delaware River. Two were disarmed and one was never activated.
- 2 The additional battery sites were added to those originally planned. In the continental United States, twenty seven 16 inch batteries and fifty 6 inch batteries were initially planned in 1940, while five 16 inch, nine 8 inch and twenty nine 6 inch batteries were initially planned for outside the continental limits.

CONTROL APPROVAL SYMBOL SPEKM-1

HARBOR DEFENSES OF GALVESTON, TEXAS

PORT CROCKETT

BATTERY LEONARD C. HOSKINS

No. of Guns 2 Caliber 12-inch Carriage Barbette

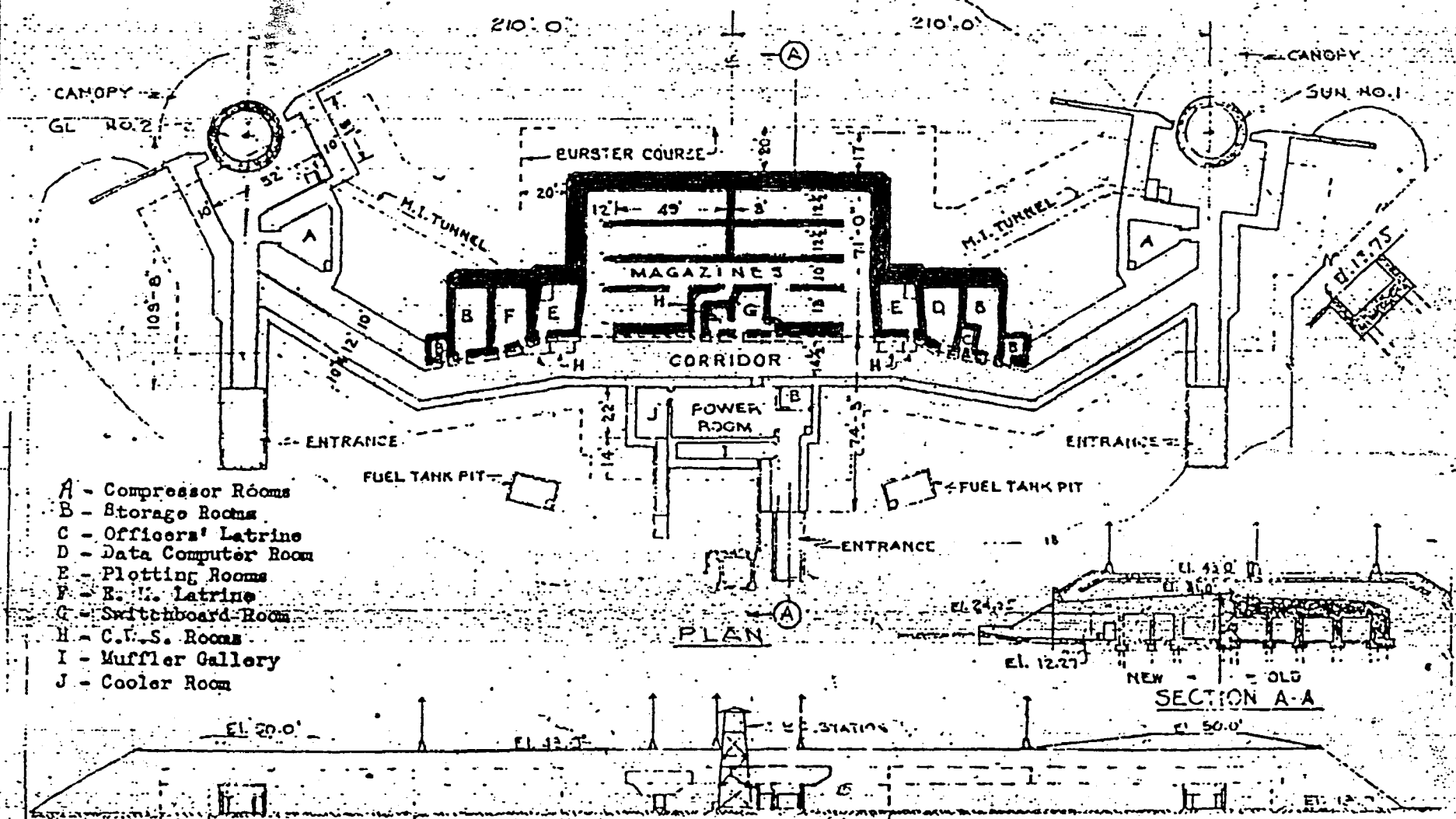
REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS

-(Battery Plan - Modernization)

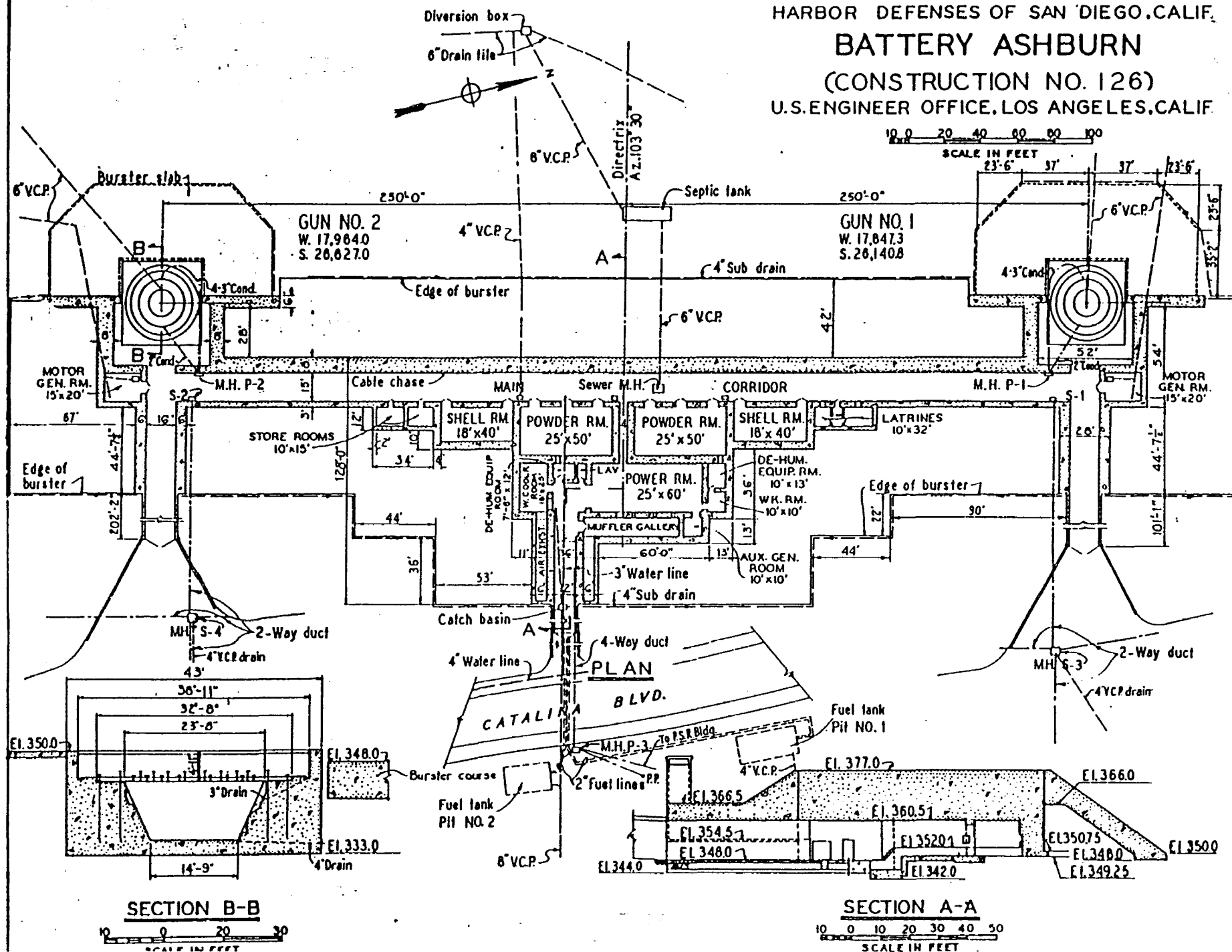
PART VII

Corrected to October 1945

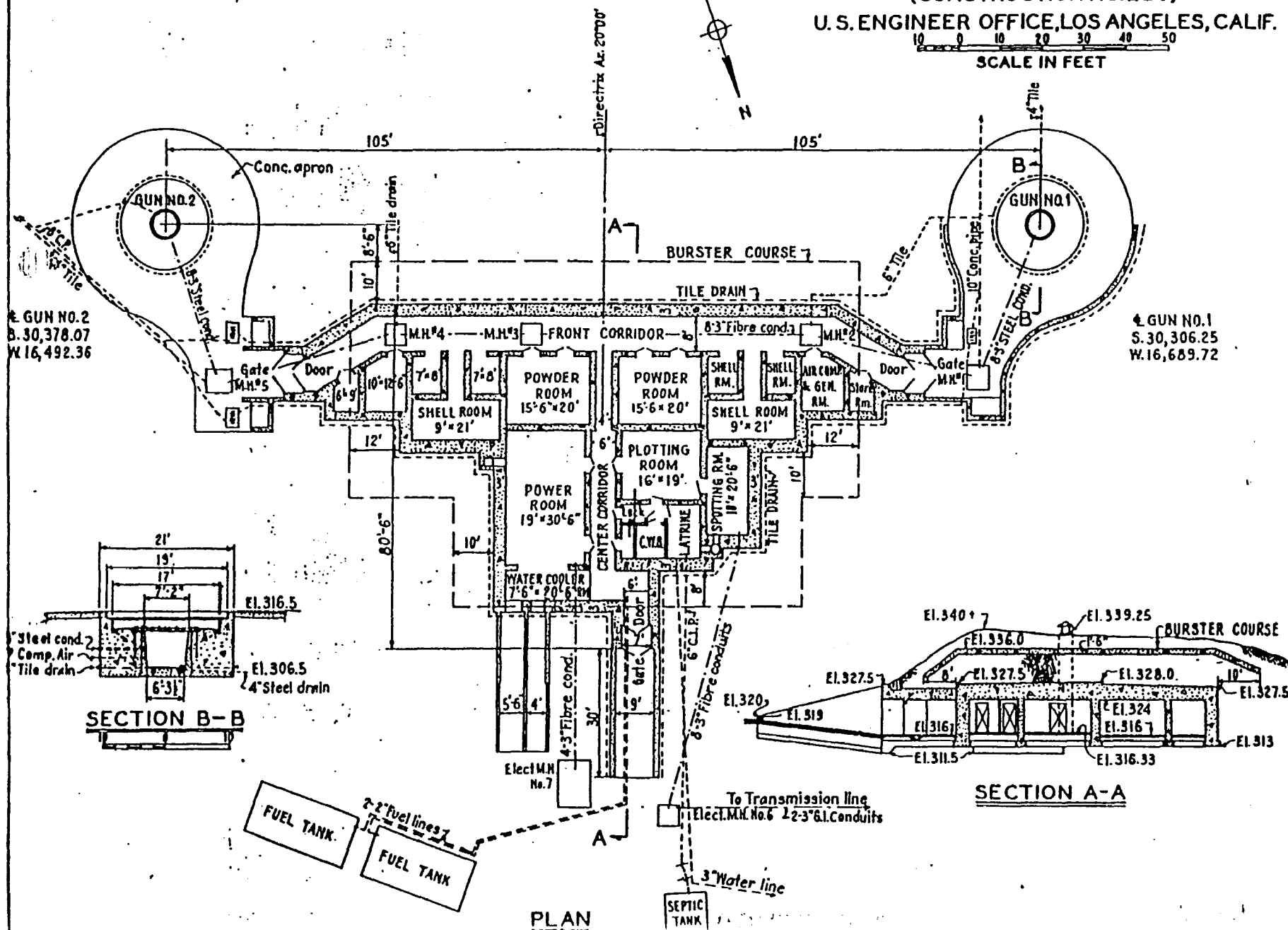
SCALE 1" = 50' 0"



HARBOR DEFENSES OF SAN DIEGO, CALIF.
BATTERY ASHBURN
 (CONSTRUCTION NO. 126)
 U.S. ENGINEER OFFICE, LOS ANGELES, CALIF.

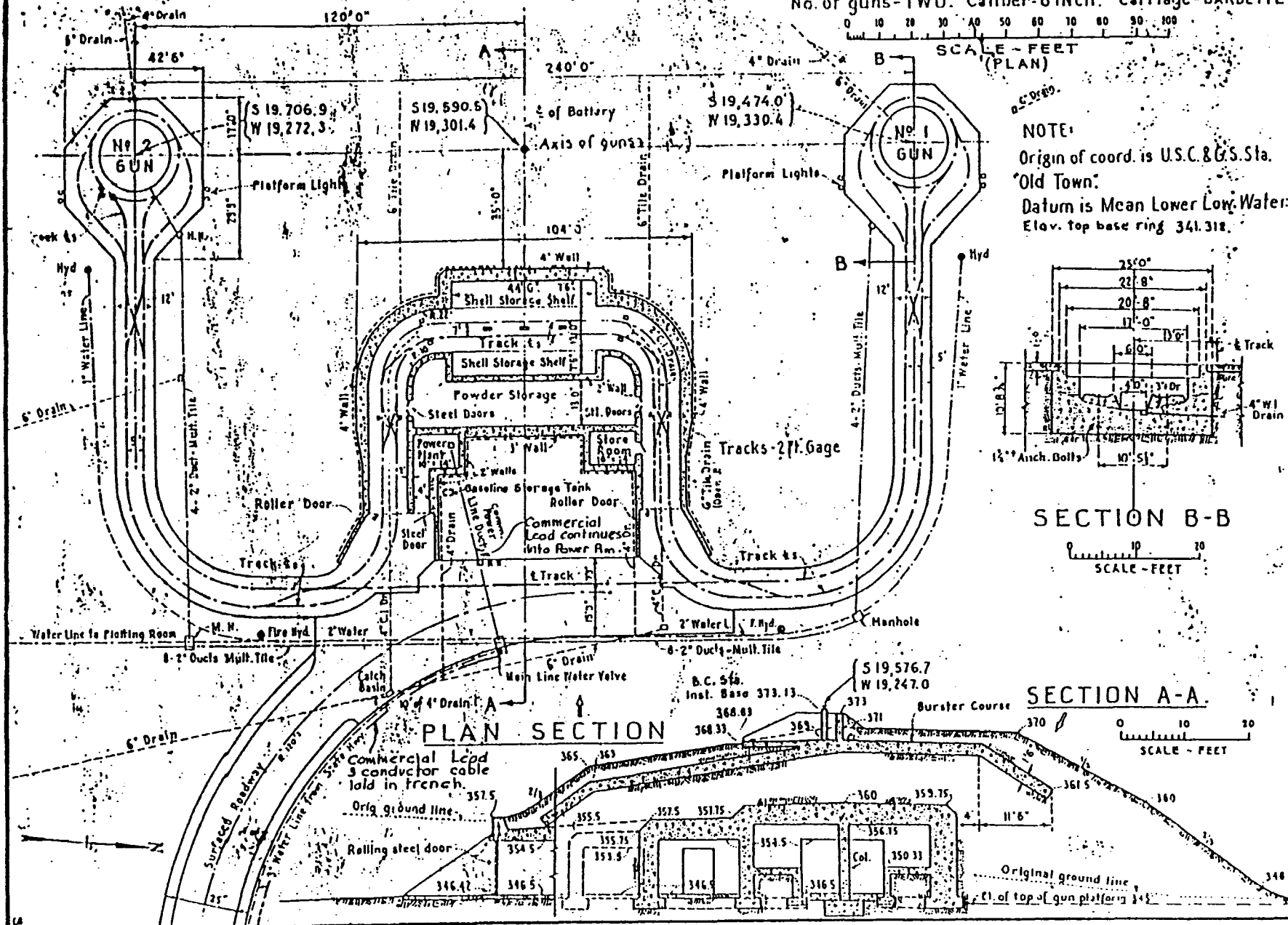


10 0 10 20 30 40 50
SCALE IN FEET

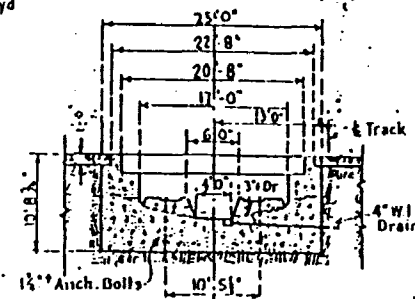


REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS.
BATTERY PLAN
FORM 7: Corrected to July 21, 1942

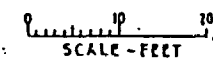
HARBOR DEFENSES OF SAN DIEGO, CALIFORNIA
FORT ROSECRANS
BATTERY STRONG
No. of guns-TWO: Caliber-8 INCH. Carriage-BARBETTE.



NOTE:
Origin of coord. is U.S.C. & G.S. Sta.
"Old Town".
Datum is Mean Lower Low Water.
Elev. top base ring 341.318.

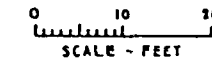


SECTION B-B

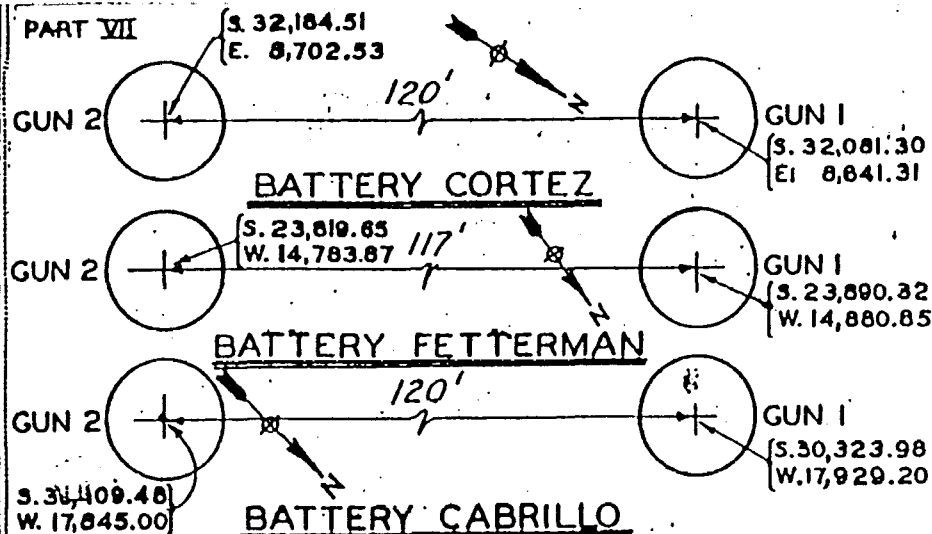


PLAN SECTION

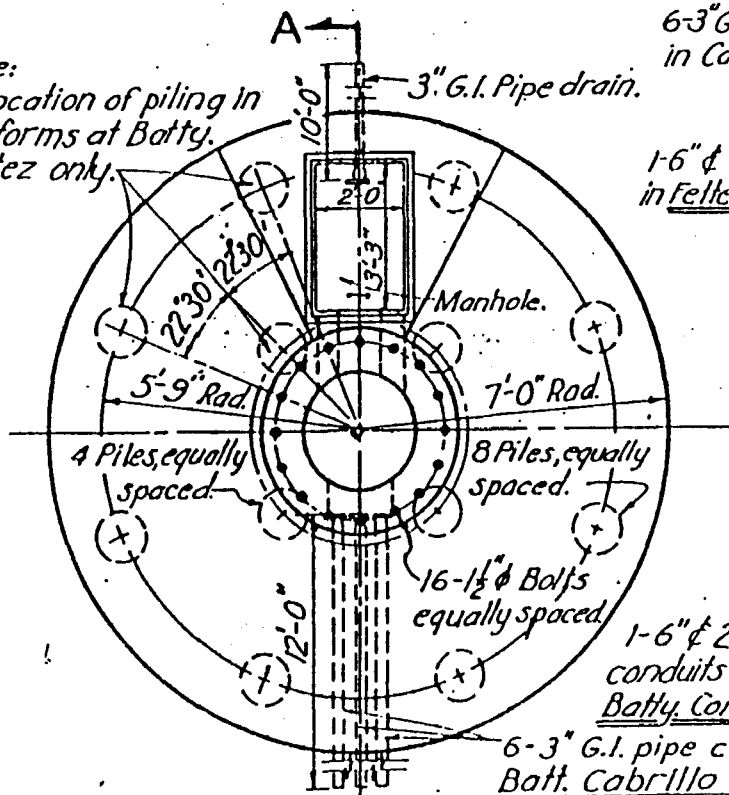
SECTION A-A



PART VII



Note:
 Location of piling in
 platforms at Batt'y.
 Cortez only.



6-3" G.I. pipe conduits
 in Cabrillo plfms.

1-6" & 2-3" G.I. conduits
 in Fetterman plfms.

1-6" & 2-3" G.I.
 conduits in each block
 Batt'y. Cortez & Fetterman

6-3" G.I. pipe conduits
 Batt. Cabrillo only.

HARBOR DEFENSES OF SAN DIEGO, CALIF.

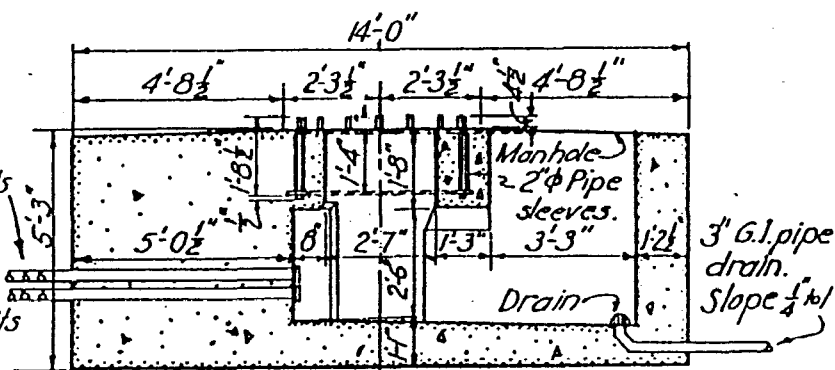
AMTB BATTERIES CABRILLO, FETTERMAN & CORTEZ

U.S. ENGINEER OFFICE, LOS ANGELES, CALIF.



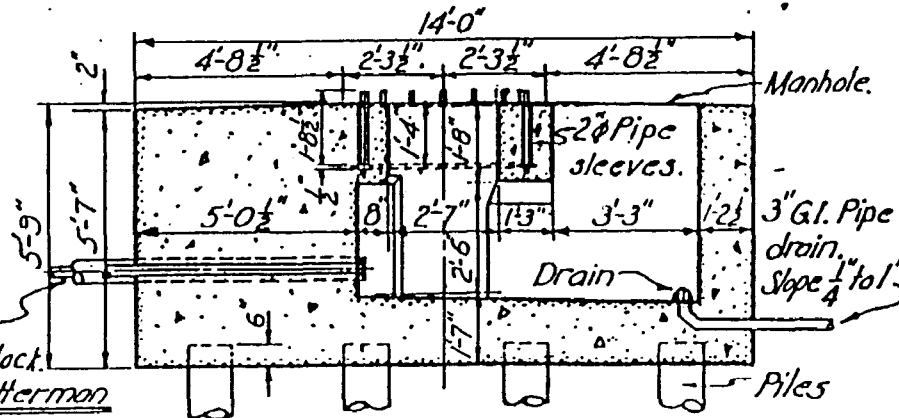
SCALE IN FEET

JOB NO: SAN DIEGO FS-1, DIR. CONSEC. NO FS-1025



SECTION A-A

PLATFORMS AT BATTERIES FETTERMAN & CABRILLO.



SECTION A-A

PLATFORM AT BATTERY CORTEZ

PACIFIC OCEAN

**SITE 8
(LOMA)**

BTRY TAG. NO. 4
BTRY TAG. NO. 5 (238-
HUMPHREYS)
BC₄
B₂ S₂
SCR 296 (RAD. 9-129)
SL 16
SL 17

**SITE 7
(CARRILLO)**

BN CP1 - SCR-682 (RAD. 9-163)
SIGNAL STATION
MET. STATION
BTRY TAG. NO. 5A
BC₃ - B₁ S₁
BC₃ - B₁ S₁
BC₃ - B₁ S₁
B₁ S₁ - B₁ S₁
SL 13
SLS 18 & 19

**SITE 6
(WEST ROSECRANS)**

WDGP-NECP-NDOP 2
BTRY TAG. NO. 3 (128-
ASHBURN)
SLS 13 & 14
CABLE HUT NO. 2

**SITE 5
(NORTH ROSECRANS)**

BN CP 2
BTRY TAG. NO. 1 (237)
BTRY TAG. NO. 2 (STRONG)
BC₁
BC₂ - B₁ S₁
B₁ S₁
SCR-296 (RAD. 9-127)
SCR-296 (RAD. 9-100) (DEF. RAD)
SLS 11 & 12
CABLE HUT NO. 1
CABLE HUT NO. 3

**SITE 4
(SUNSET)**

B₁ S₁ - B₁ S₁
B₁ S₁ - B₁ S₁
B₁ S₁ - B₁ S₁

**SITE 4A
(OCEAN BEACH)**

SLS 9 & 10

**SITE 9
(EAST ROSECRANS)**

RADIO TRANSMITTER STA.
BTRY TAG. NO. 6 (MAGNATH)
BTRY TAG. NO. 7
BC₇
RF₆
RELOC. 6
PSR₃ - PSS
SL 20
TIDE STATION STAFF ONLY
POST SWBD

**SITE 13A
(MONUMENT)**

SLS 26 & 27

**SITE 13
(BORDER)**

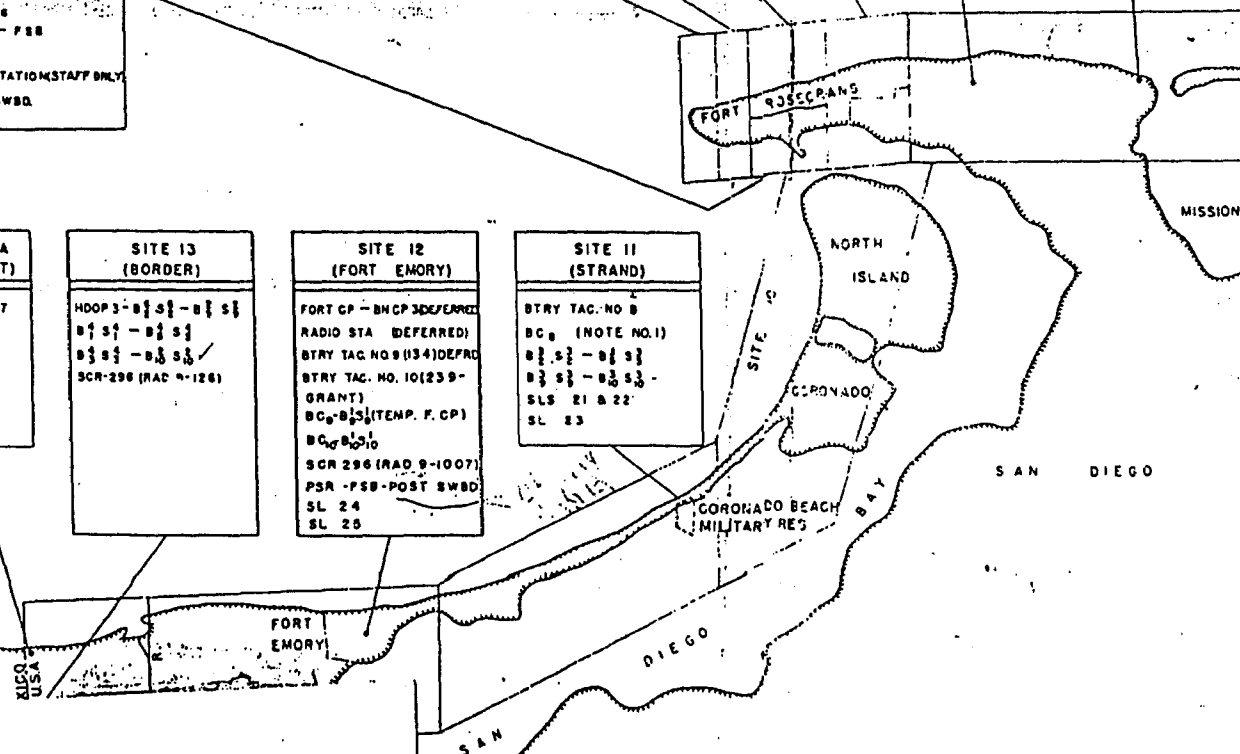
NDOP 3 - B₁ S₁ - B₁ S₁
B₁ S₁ - B₁ S₁
B₁ S₁ - B₁ S₁
SCR-296 (RAD. 9-126)

**SITE 12
(FORT EMORY)**

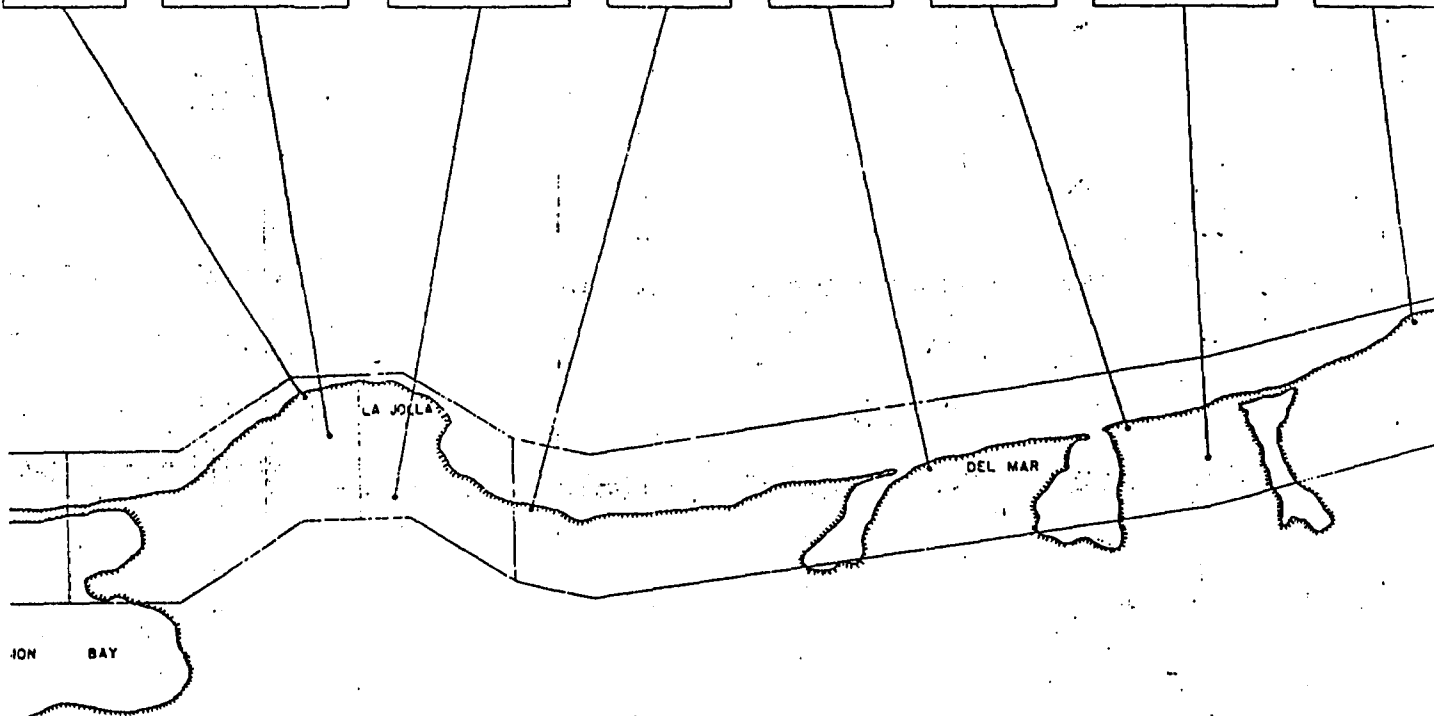
FORT CP - BNCP 3 (DEF. RAD)
RADIO STA (DEFERRED)
BTRY TAG. NO. 9 (134) (DEF. RAD)
BTRY TAG. NO. 10 (239-
GRANT)
BC₉ - B₁ S₁ (TEMP. F. CP)
BC₉ - B₁ S₁
SCR 296 (RAD. 9-1007)
PSR - PSS - POST SWBD
SL 24
SL 25

**SITE 11
(STRAND)**

BTRY TAG. NO. 8
BC₈ (NOTE NO. 1)
B₁ S₁ - B₁ S₁
B₁ S₁ - B₁ S₁
SLS 21 & 22
SL 23



SITE 3A (NEPTUNE)	SITE 3 (HERMOSA)	SITE 2 (SOLEAD)	SITE 1D (SCRIPPS)	SITE 1C (DEL MAR)	SITE 1B (SOLANA)	SITE 1 (SANTA FE)	SITE 1A (CARDIFF)
SLS 7 & 8	0151 - 0151 0151 SCR-296 (RAD 9" HCOG)	0151 - 0151	SL 6	SL 5	SLS 3 & 4	HDOPI - 0151	SLS 1 & 2



LEGEND

(126) BATTERY CONSTR. NO 126

NOTE-1: BC TO BE CONSTRUCTED WHEN REQUIRED

HARBOR DEFENSES OF SAN DIEGO

HARBOR DEFENSE ELEMENTS

ER
CALIFORNIA

DATE 1 JULY 1945

EXHIBIT 1-A

DECLASSIFIED
Authority 760 162
DATE 1976

DECLASSIFIED
Authority 760 162
DATE 1976

References

Guarding the United States and its Outposts, by S. Conn, R.C. Engleman and B. Fairchild, in *The United States Army in World War II series (the Western Hemisphere)*, Center of Military History, U.S. Army, Washington, DC (1964).

Seacoast Fortifications of the United States, by E. R. Lewis, Seventh Printing, Naval Institute Press, Annapolis, MD (1993).

American Defenses, the Final Phase, by D.P. Kirchner and E.R. Lewis in U.S. Naval Institute Proceedings (1968) Vol. 94, pp. 84-98.

History and Development of of 16 inch Gun Material Used for Seacoast Defenses, U.S. Army confidential report (undated).

Termination of U.S. Army Coastal Defenses 1945-1948, by Konrad F. Schreier, Jr., in CDSG News Vol. 6, Issue 1 (Feb. 1992), pp. 19-31.

The Oahu Turrets, by E. R. Lewis and D. P. Kirchner, in Warship International (1992) Issue 3, pp. 273-301.

The Organization of the United States Army's Ground-based Coastal Defenses--A Brief History, by William H. Dorrance, in The Fort MacArthur Alert (1993) Vol. 5, Issue 1.



The Spanish magazine *REVISTA ESPANOLA DE DEFENSA* of January 1994 contains an excellent color photo of a Vickers Armstrong 305/50mm gun firing near Algeciras (Cadiz) as a unit of the Spanish coast artillery. The accompanying article, "La Llave del Estrecho," ("The Key to the Straits"), referring to the Straits of Gibraltar, also has a color photo of the interior of the gun mount showing the breech. The magazine is available from the Ministerio de Defensa (DRISDE), Paseo de la Castellana, 109, 28071-Madrid, Spain. (AHG)