

**Primary Battery File**

**National Archives, Washington D.C.**

**Record Group 77**

**Correspondence of the Chief of Engineers**

**Entry 103**

**File, Fort, Battery:**

98227

Calf Island 16-inch

Project 1916-17

Mr. Van Rensselaer

WAR DEPARTMENT,  
OFFICE OF THE CHIEF OF ENGINEERS,  
WASHINGTON.

93227

EEW-MVAW

From: The Chief of Engineers.

June 25, 1917.

To: The District Engineer Officer, BOSTON, MASS. ✓

Subject: Design of 16-inch emplacements.

1. Copy of a design for 16-inch emplacement prepared in this office is herewith, also a copy of the letter containing description of plan, followed by an indorsement by the Chief of Coast Artillery suggesting certain readily practicable modifications, which should be incorporated in detailed designs.

2. A copy of Ordnance Department drawing of projectile truck is sent for your files. It is understood that a truck is being developed to carry the single section powder charge. Containers for these charges will be about 20 inches diameter and 9 feet long. Charge weighs 815 lbs., case about 250 lbs.

3. In view of the large difference of cost between lead and cast-iron counterweights (stated to be about \$35,000 per carriage), gun well depth is to be adapted to accommodate the cast-iron counterweight; the proper dimensions are given on the Ordnance Department "emplacement" plan, a copy of which has heretofore been sent to you.

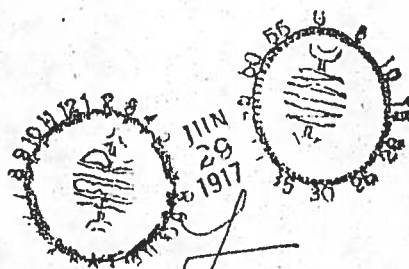
4. It is requested that preliminary plans for emplacements on Galf Island be prepared along lines indicated by data furnished to you herewith.

By command of the Chief of Engineers:

L. MILITARY ENGINEER

Colonel, Corps of Engineers.

Copies of 45631/35, 36, 95  
and 113125/3 by regd. mail.



ADDRESS REPLY TO  
THE DISTRICT ENGINEER ~~OFFICER~~  
U. S. ENGINEER OFFICE  
25 PEMBERTON SQUARE  
BOSTON, MASS.

WAR DEPARTMENT  
UNITED STATES ENGINEER OFFICE  
ROOM 1017 BARRISTERS HALL, 25 PEMBERTON SQUARE  
BOSTON, MASS.

REFER TO FILE No. 508 Forts

December 14, 1917

From: The District Engineer ~~Officer~~, Boston, Mass.

To: The Chief of Engineers, U.S. Army, Washington, D.C.

Subject: Plans and estimates for 16-inch emplacements at Calf Island.

98227/172  
RECD.  
DEC 14 1917  
OFF. CHIEF OF ENGINEERS, WAR DEPT.

File  
J.V.B.

H. Ince.

1. In compliance with instructions contained in par. 4 of E.D. letter of June 28, 1917 (98227), tracing plans in two sheets for two 16-inch emplacements at Calf Island are submitted herewith, together with two tracing plans for a wharf and breakwater at the same place.

2. The estimate of the cost of the emplacements is as follows:

# BATTERY OF TWO 16-INCH EMPLACEMENTS AT CALF ISLAND

Rock Excavation	28,960 cu. yds., @ \$4.	\$115,840.	
Sand Fill	57,260 cu. yds., @ \$1.25	71,575.	
Concrete, Mass.	39,450 cu. yds., @ \$11.	433,950.	
Concrete, Reinf.	540 cu. yds., @ \$20.	10,800.	
Brick Walls in place	388 M., @ \$26.	10,088.	
Trolley		3,000.	
Doors, steel	55 @ \$100.	5,500.	
Elec.Gen.Sets	4 @ \$5,000.	20,000.	
Lighting System		5,400.	
Latrines		2,000.	
Drains, Water, Sewers		2,000.	
Stairs and Rails		500.	
Mech. Ind.		2,500.	
Soil, Sod, Seed	16,000 sq.yds., @ 42 $\frac{1}{2}$ ¢	6,800.	
Plant		15,000.	
Transportation		8,000.	
Pumps		1,000.	
Hoists	4 @ \$3000.	12,000.	
Overhead		8,047.	
Waterproofing	6,700 sq.yds., @ \$.895	say - 6,000.	\$740,000.

OF AND BREAKWATER

23,800 cu. ft. rubble, 880 yds., 1300 tons, @ \$3.	\$3,900.	
200 tons of stone	1,200.	
346 piles	3,527.	
66 M H.P., @ \$125.	8,250.	
6,000 lbs. steel @ 10¢	600.	
148,000 cu.ft.rubble (in breakwater) 8140 tons @ \$3.	<u>24,420.</u>	
	41,897.	
Overhead Charges	<u>4,103.</u>	\$46,000.

*Francis R. Shunk*

Colonel, Corps of Engineers.

EEC

Inclos.2-5 accomp.

PROCEEDINGS OF A BOARD OF OFFICERS CONVENED IN THE COAST DEFENSES OF BOSTON PURSUANT TO VERBAL ORDERS OF THE COAST DEFENSE COMMANDER FOR THE PURPOSE OF COMPLYING WITH THE INSTRUCTIONS CONTAINED IN THE FOLLOWING LETTER AND INDORSEMENTS:

WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Room 1017 Barristers Hall, 25 Pemberton Square,  
Boston, Mass.,

Refer to File No. 448 Forts.

December 15, 1916.

From: The District Engineer Officer, Boston, Mass.

To: The Commanding Officer, Coast Defenses of Boston, Fort Warren, Mass.

Subject: Auxiliaries for 16" gun battery.

1. This office is now preparing plans for a 2-gun battery of 16" guns on Calf Island in accordance with instructions contained in the following:

CONFIDENTIAL  
2345208

14th Inst.  
War Dept., A.G.O., July 20, 1916 - To the Chief of Engineers, with the information that these papers were considered by the Board of Review at its meeting of July 12, 1916, and that it was decided to be the sense of the Board that the Chief of Engineers should be directed to prepare preliminary plans and estimates of cost, including the acquisition of sites, for installing two (2) 16-inch guns on Calf Island and for installing the accessories for this armament on adjacent islands. Action will be taken accordingly. By order of the Secretary of War:

W.M. WRIGHT,  
Adjutant General.

which was transmitted to us with request that we prepare such plans and estimates.

2. We have gotten to the point of considering the various accessories and would much appreciate your views as to what they should be and where they should be located.

3. A blue print of the vicinity showing the only practicable location for the battery, on Calf Island, is sent in separate package.

CHAS. L. POTTER,  
Lieut. Col., Corps of Engineers.

APR 27 1917  
RECEIVED  
CHIEF OF ENGINEERS  
982247/41

CONFIDENTIAL.  
11287

1st Ind.

HQ. C.D. OF BOSTON, Dec. 21, 1916. - To District Engineer Officer,  
Boston, Mass.

1. Before expressing definite views it is essential to know the arcs of fire of the guns as emplaced, the ranges that are to be expected and the other elements of the defense, if any, projected for this command.

2. It is recommended this information be obtained and communicated in order that intelligent study may be made of this subject and deductions drawn therefrom.

THOS. RIDGWAY,  
Colonel, Coast Artillery Corps,  
Commanding.

CONFIDENTIAL  
448/62 Forts

2d Ind.

GWG.

U.S. Engr. Office, Boston, Mass., Dec. 29, 1916. - To C.O. & C.D.B.  
Ft. Warren.

1. The azimuth of the line from gun No. 1 to Gun No. 2 is  $165^{\circ} - 30'$ . The arc of fire is from azimuth  $170^{\circ} - 30'$  to azimuth  $340^{\circ} - 30'$ . These guns are to fire from  $0^{\circ}$  elevation to  $15^{\circ}$  elevation with a maximum range of about 26,000 yards.

2. The Board of Review has recommended, in addition to the 16" guns on Calf Island, two 12" guns at Nahant and two 12" guns on Hog Island.

3. In connection with the study for the 16" guns for Calf Island it is desired to have your views as to the number, location and caliber of the rapid fire auxiliary guns, also number and location of the necessary observation stations and searchlights.

CHAS. L. POTTER,  
Lieut. Col., Corps of Engineers.

CONFIDENTIAL.  
11287.

3d Ind.

HQ. C.D. OF BOSTON, Dec. 30, 1916. - To Lieut. Col., William Chamberlaine, C.A.C., President of Board of Officers, heretofore convened for consideration of subjects enumerated in letter Hdqrs. Eastern Department, February 23, 1915, for recommendation. By order of Colonel RIDGWAY:

H.C. BARNES,  
Captain, C.A.C., Adjutant.

Fort Andrews, Mass.,  
5, January, 1917.

1. The board met pursuant to the call of the President, 4 January 1917, and from time to time thereafter.

2. Present: Lieut. Col. William Chamberlaine, C.A.C.,  
Captain Harry C. Barnes, C.A.C.,  
Captain Clarence G. Bunker, C.P.C.

Absent: Lieut. Col. Percy M. Kessler, C.A.C.  
Captain John H. Pirie, C.A.C., who have been ordered  
elsewhere.

3. The board recommends that the following accessories be provided and located as indicated:-

INTERMEDIATE AND MINOR ARMAMENT.

4. The Board considers the following intermediate and minor armament necessary:-

One (1) battery of two (2) 6" B.L.R. on Great Brewster.  
One (1) battery of two (2) 6" B.L.R. on Calf Island.  
One (1) group of four (4) anti-air-craft guns on Middle Brewster.

FIRE CONTROL:

5. In order to permit of a distribution of the fire of the two (2) 16" B.L.R. projected, the Board is of the opinion that they should each be equipped with a separate fire control.

6. Fort Commanders Station: Fort Commander station of the standard type to be located on North end of Great Brewster (104 feet).

7. Signal Station: Signal Station to be located on Great Brewster near Fort Commanders Station with signal masts equipped with ardois, radio and international code flags.

8. Power Plant: A Power Plant to be located in the 16" battery on Calf Island, and of sufficient capacity to furnish power and lights for all the elements of defense on that island.

9. Switchboard Room: A combined Fire Control and Post Telephone Switchboard Room to be located in the 16" battery.

10. Cable terminals: Four (4) Cable Terminals, Type "A" (see page 61, Chapter II, Signal Corps Manual #8), one on each of the following islands Calf, Great Brewster, Middle Brewster, and Outer Brewster. These terminals to be located at some point on the west side of the islands.



16" B. L. R.

11. Battery Commanders Stations: Two (2) battery commanders stations located one on each flank of the battery, each to include in its equipment a coincident-range-finder and an instrument for the observation of fire.

12. Plotting Rooms: Two (2) plotting rooms in the battery so located as to be least affected by blast.

13. Observing Stations: Two (2) primary stations of the standard type and one emergency station for each primary, all to be located on Great Brewster.

14. Secondary Stations: Two (2) secondary stations of standard type and one emergency station for each secondary, all to be located in the vicinity of Whitehead.

Two (2) secondary stations of standard type and one emergency station for each secondary, all to be located at Nahant.

The limited area in the extreme northern portion of the <sup>area</sup> of fire of the projected guns, which would not be adequately served by Brewster-Nahant base line, is to be covered by but one (1) gun and it is believed that this small area can be adequately served by the D.P.F. instruments provided at either end of the base line.

FOR 6" B.L.R. ON GREAT BREWSTER:

15. Battery Commanders Stations: Two (2) B.C. Stations at the battery, one on either flank, (See 2nd Ind., A.G.O., #2369422, Feb. 25, 1916), each to include in its equipment either a coincident range finder or a depression position finder, depending upon the height of site, and an instrument for the observation of fire.

16. Plotting Rooms: A plotting room to be located in the battery.

FOR 6" B.L.R. ON CALF ISLAND.

17. Battery Commanders Stations: Two (2) Battery Commanders stations at the Battery, one on either flank, (See 2nd. Ind. A.G.O. #2369422, Feb. 25, 1916) each to be equipped with a coincident range finder or a depression position finder, depending on the height of site, and an instrument for the observation of fire.

18. Plotting Rooms: A plotting room to be located in the battery.

WATER AND SEWERAGE SYSTEM.

21. Adequate water supply and sewerage system for the garrison should be provided, the water to be supplied by pipe line connected to the Metropolitan Water System.

WHARF.

22. Adequate wharf to be constructed for the landing under all reasonable weather conditions, and a haven for the shelter at all times of an Artillery vessel of the approximate size of the Junior Planter. (98' long, 12' draft).

TRACKAGE AND TRANSPORTATION.

23. Rail transportation from dock to magazines, etc., to be supplied, including a dock power crane capable of lifting 16" projectiles (2550 lbs).

STORAGE FACILITIES.

24. Adequate protected storage facilities to be provided for:

Rations: Thirty (30) days supply for the garrison estimated above.

Fuel: Not less than three (3) months supply for all purposes.

Armament: Sufficient for the accuracy life of each gun projected.

25. In the opinion of this board the accessories above recommended are essential, if two (2) 16" B.L.R. projected are to be placed on Calf Island. Attention is invited to the fact that elements of the defense are recommended to be located on four (4) different islands of the Brewster group, which, in the opinion of the Board, cannot be avoided. This installation will undoubtedly be exceedingly expensive and very difficult to supply and maintain. In this connection, attention is invited to the following extract from a previous of this board:

*proceedings*

"Brewster Islands.

With reference to 2d Ind. Hq. N.A.C.A.D. (4959) dated April 2, 1915, the Board is of the opinion that, if the Brewster group of islands were selected as a site for Major caliber fortifications the following difficulties and objectional features would be encountered:

1. Small available space for projected armament.
2. Unsuitability of terrain.
3. Difficulty of supply and reinforcement in time of war.

29. In addition to the engineering difficulties which must be overcome in the construction of these batteries, because of the absence of any top soil and of the fact that the island is composed entirely of weathered metamorphic rock, this formation will, of itself, constitute a serious menace to the defense, due to fragments of rock resulting from hostile fire.

30. The board adjourned sine die.

WILLIAM CHAMBERLAINE,  
Lieut. Colonel, Coast Artillery Corps,  
President.

H.C. BARNES,  
Captain, Coast Artillery Corps,  
Member.

C.G. BUNKER  
Captain, Coast Artillery Corps,  
Recorder.

HEADQUARTERS  
COAST DEFENSES OF BOSTON  
FORT WARREN, MASS.

CONFIDENTIAL.

REFER TO NO. 11287-A.

Jan. 11, 1917.

FROM: Coast Defense Commander.

TO: Commanding General, North Atlantic Coast Artillery District

SUBJECT: Auxiliaries for 16 inch gun battery.

OFFICE CHIEF OF ENGINEERS  
APR 2 1917

470. CD. Boston  
98007/50

There is inclosed herewith copy of the proceedings of the board of officers convened by me for the purpose stated therein. Attention is invited to these proceedings and especially to paragraph 26 thereof, in which it is suggested that this matter be reconsidered before final action is taken by the Board of Review. I concur in the conclusions and recommendations of this board and recommend that this paper be forwarded for the consideration of the Board of Review.

*Thos. O'Neil*  
Colonel, Coast Artillery Corps.

1-Incl.  
(in triplicate).

Received, U.S. N.A.C.A. Dist. JAN 15 1917

470. B

1st Ind.

HQ. N.A.C.A. Dist., Jan. 18, 1917 - To Comdg. Gen., Eastern Department.

1. In forwarding report of a local Board on Seacoast Armament and Ammunition, (Par. 4, 2d Ind., Hq. N.A.C.A. Dist., April 22, 1915, File No. 5038; H.E.D. 16256), I expressed the view that 16-inch guns should be mounted on the Great Brewster Island. This view was divergent from those of the Board and of the Coast Defense Commander, who proposed no batteries on the Brewster group.

2. The Board of Review later selected Calf Island, of the Brewster group, as the site for the new 16-inch guns.

3. In the within report, a Board of Officers appointed in the Coast Defenses of Boston makes a discussion of the auxiliary defensive measures which the adoption of Calf Island as a site will entail. It is evident that great expense will be involved; this will probably be the case if the 16-inch guns be mounted on any of the Brewster Islands; the expense will undoubtedly be less if a site on the main land should be chosen.

4. The Board also points out certain defects in the Calf Island site (page 7) and suggests the possibility of substituting movable heavy guns on Point Allerton and Nahant for the proposed fixed armament on the Islands, the latter having no fire on the interior waters (page 7). Attention is especially invited to these parts of the report.

5. I have no data which permit forming a judgment as to the cost of an adequate additional defense by movable heavy guns, with the accessories of railway, prepared positions, fire control, etc., nor as to the possibilities and limitations of the guns of this description which can be developed in this country within a reasonable time. If sufficient mobility can be given to guns of the destructive power of the fixed 16-in. B.L.R., it will be a great advantage; but, if such guns can not be certainly made available as soon as the better-known fixed guns, I do not think that we should delay the execution of adopted projects to await the development of the new weapon.

6. Heavy guns should be mounted to defend the line Nahant-Brewster-Point Allerton. Since the choice of the Brewster position entails so great expense, it may be well to look further into the possibilities of a main land position. 16-inch guns on Point Allerton would have nearly the same long-range fire-effect as if mounted on the Brewster group. (difference At shorter ranges the present armament is sufficient, and it makes little/where the 16-inch guns are. The matter of cost may reasonably determine the choice of the position, as between these two.

7. I am informed that the cost of a new site on the hills at Nahant would not be prohibitive; and hope that, in time, at least two 16-inch guns will be placed there.

*W. F. Rodgers*  
Brig. Gen., Comdg.

1 Incl., (in dup.)

Forwarded By Eastern Dept. JAN 19 1917

CONFIDENTIAL.

DD

470. C.D. Boston.

2d Ind.

/pmf

HQ. EASTERN DEPT., Jan. 31, 1917 - To The Adjutant General of the Army.

1. Attention is invited to indorsement on A.G.O. 2267187-A-9 (H.E.D. 665. C.D. of Boston) returned this date, copy inclosed, which gives in full my views as to the proposed plans for increasing the armament of Boston Harbor.
2. The report of the board of officers forwarded herewith should be approved in so far as the accessories are concerned if the proposed plan is adhered to. Attention is especially invited to so much of the board's report (par. 28) as shows Calf Island to possess such serious disadvantages as a site as to call for reconsideration of the entire project.
3. Calf Island has never, to my knowledge, been recommended by anyone in the Coast Defense, or at Artillery District or Department headquarters. It was considered by the undersigned and the board of officers who assisted in preparing the recommendations contained in H.E.D. 470. June 25, 1915, and discarded; the extent of its deficiencies, however, was not fully appreciated until the present report was received.
4. The cost of installation of batteries and accessories and the difficulties of supply were all considered when the occupation of Great Brewster was recommended. I renew my recommendation for that site provided that a reasonable supporting armament of 6" and 3-inch guns be added to the present plans. Unless this be done I cannot recommend in favor of occupying the Brewster Group.
5. Attention is invited also to the character of mount for these 16-inch guns as given in 2d indorsement, U.S. Engineer Office, Boston, Mass., Dec. 29, 1916 (page 2 of the Board's report). A.G.O. 2348148, Jan. 10, 1916, stated that at least 30 degrees elevation was to be given guns in future, and an arc of fire demanded by local conditions. Apparently this decision has been overlooked in these plans, which should be redrawn to conform to modern requirements. As I have recommended in former papers, I do not believe we should mount these guns on carriages which deprive them of any portion of their effective range, which means they should be given the maximum range, since the destructive effect increases with the range beyond 21,000 yards.
6. The substitution of mobile for fixed defenses as proposed by the Board does not appear to meet the requirements of the situation which calls for a long range armament surely available when needed. The land approaches

both to Nahant and Allerton, are narrow strips along the sea front and, consequently, exposed to interruption of communication in many ways. Railroad artillery provided may reinforce the defense from positions on the Boston and Maine Railroad northeast of Lynn and from positions between Hingham and Nantasket or Cohasset, but should not be depended upon to the exclusion of fixed long range batteries.

7  
1 Incl. added.  
2 Incls.

*[Signature]*  
Major General, Commanding.

Received A.G.O.,

FEB 5 1917

CONFIDENTIAL  
2267187-A-12

3d Ind.

A.G.O., February 6, 1917.-To the Chief of Coast Artillery.

2 incls.

6 RECD FEB 6-1917 O. C. A.  
*made inc. to orig*

ADDRESS REPLY TO  
THE DISTRICT ENGINEER OFFICER  
U. S. ENGINEER OFFICE  
25 PEMBERTON SQUARE  
BOSTON, MASS.

WAR DEPARTMENT  
UNITED STATES ENGINEER OFFICE

ROOM 1017 BARRISTERS HALL, 25 PEMBERTON SQUARE  
BOSTON, MASS.

REFER TO FILE NO. **448 Forts**

February 7 1917

RECD. OFFICE CHIEF OF ENGRS.

FEB 11 1917

44

98227

From: The District Engineer Officer, Boston, Mass.

To: The Chief of Engineers, U.S.A., Washington, D.C.  
(Through the Division Engineer, Northeast Division.)

Subject: Preliminary plans and estimates for 2 16" guns on Calf Island, Boston Harbor.

1. Complying with par.2, 1st ind. on wrapper on E.D.98227/17, dated Aug.5, 1916, there are submitted herewith a blue print of E.D.98227/32 (on which has been sketched the general location of a battery of two 16" guns on Calf Island), and a tracing showing the details of the battery.

2. After locating the battery, the general plan was submitted to the Coast Defense Commander for his views as to the accessories which would be needed to serve the battery. He referred the matter to a board of officers, and a copy of its report is herewith. In that report, a copy of which Colonel Ridgway furnished the District Commander, the board finds many reasons why Calf Island should not be the site of such a battery, all of which is submitted herewith for such consideration as may be considered advisable.

3. The following estimates cover practically all the matters suggested by the board, except that no storage for rations, fuel, and ammunition, and no quarters for the personnel, are provided except such as are in the batteries themselves. Further provisions along that line are considered to be within the province of the Q.M.Department. Also the board calls for 84" searchlights and we have substituted the 60" in their place.

4. Estimate for Calf Island.

Purchase: - Calf Island (assessed at \$22,750)-----	\$30,000.
Construction:- 16" two-gun battery, -----	543,000.
6" " " " -----	30,000.
Wharf, (full cost) -----	50,000.
Cable terminal, -----	1,000.
60" searchlight (with light and power) -----	8,000.
Equipment:- Water distilling plant (7,000 gallons), -----	10,000.
TOTAL -----	\$672,000.

This does not include the "haven" suggested by the Artillery Board, but does provide a good landing wharf.



5.

Estimate for Great Brewster.

Purchase:- Great Brewster (assessed at \$16,950) -----	\$18,000.
Construction:- 6" two-gun battery, -----	28,000.
Fort Commander Station, -----	2,500.
Signal Station, -----	2,000.
60" searchlight (with light and power), -----	14,000.
Wharf, -----	15,000.
Two primary stations, -----	5,000.
Cable terminal, -----	1,000.
TOTAL -----	\$85,500.

The excessive cost of the searchlight over that on Calf Island is due to the fact that it must be on much higher ground than the battery and must have a power-house provided. Great Brewster belongs to the City of Boston and should cost near assessed value.

6.

Estimate for Outer Brewster.

Purchase:- Owned by United States, -----	- 0 -
Construction:- Wharf, -----	\$5,000.
Cable terminal, -----	1,000.
Two 60" searchlights (with lights and power) -----	35,000.
TOTAL -----	\$41,000.

The heavy cost of searchlights is due to the fact that each light must have its power-house, the location is very isolated, and the island is solid rock, adding to cost of excavation.

7.

Estimate for Middle Brewster.

Purchase:- Middle Brewster (assessed \$11,600), -----	\$16,000.
Construction:- Emplacements (4 anti-aircraft), -----	5,400.
Wharf, -----	5,000.
Cable terminal, -----	1,000.
TOTAL -----	\$27,400.

8.

Estimate for Nahant.

Purchase:- Land for secondary stations, -----	\$1,800.
Construction: Two secondary stations, -----	3,000.
TOTAL -----	\$4,800.

9.

Estimate for Whitehead.

Purchase:- Land for secondary stations, -----	\$1,000.
Construction:- Two secondary stations, -----	3,000.
TOTAL -----	\$4,000.

10.

RECAPITULATION.

Calf Island -----	\$672,000.
Great Brewster -----	85,500.
Outer Brewster -----	41,000.
Middle Brewster -----	27,400.
Nahant -----	4,800.
Whitehead -----	<u>4,000.</u>

TOTAL --- \$834,700.

11. Considering the fact that Middle Brewster has to be bought, and a wharf and cable terminal provided, at a total cost of \$22,000, for the sole purpose of locating an anti-aircraft battery of 4 guns, at a cost of only \$5,400, the expense seems unwarranted. It is believed that such guns could be placed on Great Brewster. There will probably not be room for them on the high ground at the north end of Great Brewster, but they can be placed on the south end (on the 25' contour) and get a minimum elevation of 7°, passing 40 feet above all activities on the high ground and reaching a minimum height of about 500 feet above the vicinity of the 6" guns at the extreme north end of Calf Island. Locating these guns on Great Brewster will save \$22,000, reducing the complete estimate to \$812,700.

12. The complete wharf at Calf Island has been estimated for, although it has been customary to have the Q.M. Department pay one-half. If, however, it be essential to make an enclosed harbor as suggested by the Artillery board, the Q.M. Department will have done its share when it has provided for that.

13. A detailed estimate for the 16" battery alone is as follows:

Excavation (rock), 28,500 cubic yards at \$3. -----	\$85,500.
Concrete, 33,300 " " " 9.50 -----	316,350.
Earth fill (purchased) 58,000 cu.yds. " 1.00 -----	58,000.
Sewer and water pipes, -----	1,000.
Doors and windows, -----	2,500.
Range boards and mechanical indicators, -----	1,000.
Brick work, 225 M at \$20 -----	4,500.
Power plant and lighting -----	15,000.
Trolley system, -----	1,500.
Shot tables, -----	500.
Plumbing, -----	700.
Waterproofing, -----	900.
Sodding and seeding, -----	4,000.
Railroad to wharf, -----	1,500.
Wharf (one-half cost), -----	25,000.
Distilling plant (7,000 gallons per day), -----	<u>10,000.</u>
	527,950.
Plant, engineering and contingencies, -----	<u>50,000.</u>

TOTAL ----- \$577,950.

This differs from the figure given in paragraph 4 by \$35,000,- \$25,000 for the wharf and \$10,000 for the distilling plant, listed separately in paragraph 4.

IAK

Inclo. 71 accomp.

Tracing and b.p. in sep. roll.

*Chas. L. Potter*  
Colonel, Corps of Engineers.

Fortfns. Boston Dist. 6/1

1st Ind.

The Division Engineer, Northeast Division, New York City,  
February 10, 1917 - To the Chief of Engineers, U. S. Army.

1. Forwarded.

2. The question of new defenses for Boston Harbor was taken up by the Commanding General, Eastern Department, in the latter part of January in connection with the approval of the location for two 12-inch high-angle fire guns at Nahant. Before taking this action the General had Colonel Haan of the Coast Artillery, Colonel Taylor and myself over to Governors Island, and there, in company with Colonel Bartlett and Captain Kilbourne, the whole matter was the subject of discussion for several hours. I inclose herewith, for the convenience of the Department, copies of indorsements of General Wood, dated January 31, 1917, which show in a very definite way the conclusions he reached after the above cited discussion.

3. I took advantage of the presence in my office this morning of General Hodges who authorizes me to quote him as "unhesitatingly condemning any project to mount 16-inch guns on Calf Island". His view is that 16-inch guns should go on Great Brewster Island, with sufficient 6-inch guns and 3-inch guns for their support.

4. I note also from Colonel Potter's report that the batteries provide for only a limited fire for the 16-inch guns on Calf Island. I understand that all 16-inch guns now to be mounted should be in emplacements so designed as to permit all-round firing. If the 16-inch gun is given all-round fire, it is apparent that it should be so mounted as to permit use at extreme ranges with 45° elevation, certainly for that part of its field of fire covering the land defenses of Boston.

5. The last thing I want to do is to make any suggestions to delay the work of defending Boston, but I am firmly convinced that the Calf Island site is utterly wrong for 16-inch guns. I concur with Colonel Potter that the anti-air craft guns could undoubtedly be mounted on Great Brewster Island, if bought. As the District Officer states in paragraph 5 that this Island belongs to the City of Boston, I recommend its purchase at the earliest possible date, and the emplacing thereon of suitable armament along the lines outlined in General Wood's indorsements.

45-49  
Inclos. 2-4 herewith;  
1 Trac'g & 1 b.pt. in sep. roll.

*Frederic V. Abbott*  
Colonel, Corps of Engineers.

OK 2345-208

*[Handwritten notes:]*

The Division  
of Engineering,  
U.S. Army.  
New York City.

1617

4. I note also that Colonel Foster's report that the lat-  
ter was given only a limited time for the 16-inch guns on  
Oahu Island. I understand that the 16-inch guns now to be  
mounted should be in operation as early as 1916. It is  
all-round firing. It is 16-inch gun as given all-round firing.  
it is apparent that it should be so mounted as to permit  
at extreme ranges with 45° elevation, certainly for that part  
of the field of fire covering the land between the harbor

[illegible]