

**Primary Battery File**

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

**Record Group 77**

**Correspondence of the Chief of Engineers**

**Entry 96**

**File, Fort, Battery:**

**1891: 3163**

**1892: 932**

**Ft. Monroe**

**Btry Bamford**

# United States Engineer Office,

601 Eighteenth Street, N. W.,

*Washington, D. C.*, May 27, 1891.

The Chief of Engineers, U.S. Army,

Washington, D.C.

General:

In compliance with your orders of March 5, 1891, directing me to submit a project and estimate of cost of the construction of emplacements for two 8" guns in the redoubt of Fort Monroe, I have to submit the following:-

The approved project calls for two 10" guns to be mounted in the redoubt, but as the emplacements for 8" and 10" guns are precisely alike, what answers for one will do for the other.

The redoubt was originally constructed for six 15" guns, and the emplacements for four of them were nearly completed when the work was stopped. The old work cannot be utilized to any appreciable extent, in the construction of the new emplacements, but will have to be almost entirely taken down.

The general plans of the work furnished by the Chief of Engineers have been followed. The changes proposed relate chiefly to details. The full thickness of the concrete and sand covering for the guns and magazines has been retained, as this redoubt may be subjected to the fire, at long or short range, of the largest guns afloat.

The plans of the Board placed the floor of the magazines at 4 feet above high tide. It is not unusual for storm tides to reach 4 feet above high water and at rare intervals, it rises still higher. In April 1889, the tide reached a height of  $5\frac{1}{2}$  feet above that level. I have therefore placed the floor of the magazines at reference 6 instead of 4. This adds considerably to the cost, but I think it essential that the magazine floors should be above the highest tides.

As the type of gun-carriage has not yet been definitely adopted, and as one type may require a lower platform than another, I propose to defer the construction of the magazines and their entrances from the gun-platforms, until a type of gun-carriage has been decided on.

In this connection I desire to submit an alternative plan for the magazine entrances, shown on a small tracing--sheet No. 6. It will be noticed that the redoubt may be subjected to a slant fire at long range from vessels drawing not more than 21 to 22 feet, and at short range from vessels drawing 14 feet. The armament of vessels of the latter class, is invariably light. Their fire is therefore hardly worth considering, as a few 10" guns, on shore, well served, would soon destroy them. Great Britain and France each have ships armed with breech-loading rifles of 12" to 13.5" calibre, that draw only about 22 feet. The fire from such guns, while inaccurate at long range, is not to be totally disregarded. The 12" gun at six miles has a penetration of about 18 feet into concrete. A shot

coming over the parapet near the gun, might clear the latter and strike the thin masonry at the side of the magazine entrance, and even if no other damage were done, the entrance to the magazine would be wrecked, and communication with it cut off. I admit that the chances of such a shot are rare, and that the gun itself is liable to be disabled in the same way, but every chance should be avoided if practicable. This danger will become greater if it be necessary to raise the level of the platform.

The trajectory of a 12" breech-loading rifle at the range of  $5\frac{1}{2}$  miles has an angle of descent of about  $16^\circ$ , or about 1 vertical to 3.5 base. With a view to giving better cover to the entrance, I would suggest the expediency of arranging the magazine entrance as shown on sheet No. 6. No fire from a ship can come from the rear of the redoubt, and the entrance would be thus less exposed to damage. As it is most probable that the full width of 62 feet will not be needed for the gun-platform, an additional thickness can be given the masonry on the exposed side, so as to secure a thickness of 18 feet, the same as there is on the other side. By this arrangement the advantage of an exit from the magazine close to the breast-wall is lost, but in this particular case, I am of the opinion, that the loss is more than compensated for by greater security.

In order to retain a passage-way of 20 feet in rear of the gun-platforms, it has been necessary to lower the interior crest of the parapet on the rear side of the work from reference 17.5 to reference 14.5. If a type of gun-carriage be adopted that will re

quire a higher platform, the slopes from the platforms should be made steeper by means of a revetment, but this is a detail that can be provided for when the occasion arises.

I enclose 7 sheets of drawings which explain themselves.

I estimate the entire cost of the work at about \$177,500. as follows:

Removal of Old Work.

37,200 cu.yds. sand at 25c.-----	\$9,300.
1,400 cu.Yds. concrete at \$1.50 -----	2,100.
230 cu.yds. stone at \$1.50 -----	345.

New Work.

Excavation of soft material between high and low water under concrete of parapet, 3,500 cu.yds. at 40c.----	1,400.
Filling the same with sand, 3,500 yds. at 30c.-----	1,050.
Concrete in parapet of new work, 22,340 cu.yds. at \$5.50-----	122,870.
Sand in same, 32,000 cu.yds. at 30c.-----	9,600.
Soil in same, 3,000 cu.yds. at 80c.-----	2,400.
Steps, 4 flights at \$550.-----	2,200.
Doorways and doors, 4 at \$500., 2 at \$100.-----	2,200.
Coping for retaining walls, 214 ft. at \$3.-----	642.
Rebuilding and extending B.H.Walls,-----	3,000.
Widening ditch at N. end of redoubt 8,500 cu. yds. at 50c.-----	4,250.
	<u>\$161,357.</u>
Contingencies, 10%	16,136.
	<u>\$177,493.</u>

Very respectfully,

Your obedient servant,



Lieut. Colonel, Corps of Engineers.

Tinaloa.  
Pt.M.

3163 ENGR. DEPT. 1891  
Receiver MAY 28

107 The Board of Engineers 1891

City, Pa. 21st 91.

James Smith & Co.

Drawings for and estimate of cost for the side gun in the vault of Fort Mifflin.

7 inches, tracing.

1415

RECD. ENGR. DEPT. JUN. 18 1891.

RECD. ENGR. DEPT. JUN 10 1891. without marks.

RECEIVED JUN 9 1891.

1st Indorsement.

Office, Chief of Engineers,  
No. 5 Army,  
May 25, 1891.

Respectfully referred to the Board of Engineers for consideration and report.

Wm. H. Smith, Chief of Engineers.

3163-1891. (Sho. 1-7 in separate note by mail.)

2nd Indorsement.

The Board of Engineers,  
Army Building,  
New York City, June 6, 1891.

Respectfully returned to the Chief of Engineers. This project has been considered by the Board and is recommended for approval, with the following modifications:

- 1st. That the exterior slope of the concrete mass in front of the emplacement shall extend only 12 feet below the surface, as shown on the drawing. Below this level

it shall be bounded by a vertical plane.

2nd. That the entrance to the magazines, as shown on Tracing No. 1, shall be shifted to a position in the prolongation of the general passageway along the magazine; this with a view to avoiding the use of the shell room as a general passageway.

The Board has considered the alternative proposition for the magazines, shown on Tracing No. 6, but is of opinion that, under all the circumstances of the case, the design above indicated is preferable.

For the Board:

Henry D. Atter,  
Colonel of Engineers,  
Bvt. Brig. Gen., U.S.A.,  
President of the Board.

RECD. ENGR. DEPT. JUN 9 1891.

3rd Indorsement.

Office, Chief of Engineers,  
No. 5 Army,  
June 9, 1891.

Respectfully returned to Lieut. Colonel Spain.

The within project is approved, with the modifications recommended by the Board of Engineers in the foregoing indorsement; and with the further modification, that the concrete wall begin at reference (+2) instead of at (0), and the passageway at the rear shall be at reference (+5) instead of at (+3). Now estimates of cost in view of these modifications are desired.

To be returned,  
By command of Brig. Gen. Can.

John S. D. Strong,  
Captain, Corps of Engineers.

3163-1891. (without marks.)

4th Indentment.

21 S. Engineer Corps,

Washington, D.C., June 10, 1891.

Respectfully returned to the Chief of Engineers, U. S. Army, Washington (T-3) of the above, basing my view of the gun platforms on, in my opinion, the increased to (45) without detriment, and the concrete can then begin at reference (T-2). This modification, together with that recommended by the Board of Engineers, or extending the exterior slope of the concrete mass only 12 feet below the surface and lowering it by a vertical surface, will effect a reduction in the estimate of about \$13,645, so that the estimate of cost of the emplacement will be \$158,848, instead of \$174,493.

*W. S. Denny*

Lieut. Colonel, Corps of Engineers

316  
1891, 3177.

RECD. ENGR. DEPT. JUN 10 1891.

5th Indentment.

Office Chief of Engineers,

U. S. Army,

June 11, 1891.

Respectfully returned to Lieut. Colonel Denny, who is charged with the execution of the entire project as shown in 3rd indentment, for which the sum of \$158,848 is allotted from the appropriation of March 24, 1891, for gun and mortar batteries.

To be returned by command of  
Brig. Gen. Casey:

John S. D. Struicks  
Captain, Corps of Engineers.

(3163-1891.)  
(Without inclos.)

Recd U. S. G. O. June 12, 1891.

# United States Engineer Office,

601 Eighteenth Street, N. W.,

Washington, D. C., February 13, 1892.

Brig.Gen.Thomas L.Casey,

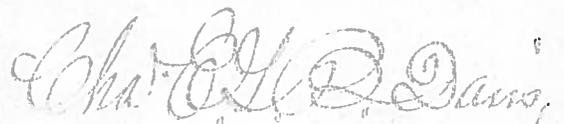
Chief of Engineers,U.S.A.

General:

In the construction of new emplacements for two 8" guns in the redoubt at Fort Monroe, Virginia, it is found that operations will be greatly facilitated by the establishment of telephonic communication between the office, the wharf where the material is landed, and the redoubt. There is on hand sufficient old material at the post, to put up a wire between these points at small expense. In order to complete this means of communication there will be required either three or four telephones with accompanying batteries and apparatus, which will cost \$20.00 each for the purchasable portions of the outfit, and \$20.00 per station per annum for each set of telephones and transmitters, which are rented but not sold by the Telephone Company.

As the establishment of a telephone line will greatly facilitate the progress of the work, I respectfully request authority for the above mentioned expenditure.

Very respectfully, your obedient servant,



Major, Corps of Engineers.

111

932  
 ENGR. DEPT.  
 Received FEB 15 1892

932

Washington, D.C.,  
 Feb'y 13, 1892,

David Hayes E. E. I. O.

To facilitate work on  
 new equipments for  
 8<sup>th</sup> guns in redoubt at  
 Fort Monroe, requests with  
 to erect telephone line  
 between Office, co-hort,  
 redoubt, with additional  
 on hand at small expense,  
 and purchase batteries  
 etc, for 3 or 4 telephones  
 at \$20, each, and pay \$20.  
 per year rent for each  
 telephone.

D. ENGR. DEPT. FEB 16 1892

File

Final

Office Chief of Engineers,

U. S. ARMY.

February 15, 92.

Respectfully returned approval for such  
 action as the services may be rendered.  
 When such record is not necessary  
 has been noted, this paper will be returned  
 to this office.

By order of Brig. Gen. Casey:

John S. R. Strong  
 Captain, Corps of Engineers.

932-1892.  
 Recd. S. Washington 15 Feb. 1892  
 U. S. Engineer Office,  
 Washington, D. C.,  
 Feb'y 16, 1892.

Respectfully returned to the  
 Chief of Engineers, U. S. A., record  
 having been made.

John S. R. Strong

Major, Corps of Engineers.

88  
 1892. Ft. M.

REC'D. ENGR. DEPT. FEB 16 1892