

Primary Battery File

National Archives, Washington D.C.

Record Group 77

Correspondence of the Chief of Engineers

Entry 103

File, Fort, Battery:

16485

Ft. Taylor

Btty Covington and DeLeon

79/ [redacted]
SUBJECT: Defenses at Key West, Fla.

*Office of the Chief of Engineers,
United States Army.*

Washington, D. C., August 8, 1896.

Lieut. Col. W. H. H. Benyaurd,
Corps of Engineers,
New York City.

Colonel:

In apportioning the amounts to be allotted to various harbors under the authority of the contract clause of the Act of June 6, 1896, it seems desirable to provide for the construction of the following defenses at Key West:

Reservation near Fort Taylor.- Emplacements for four 10-inch guns on disappearing carriages, model of 1896; and emplacements for sixteen 12-inch mortars.

The sites will be approximately those shown on the drawings accompanying the project for the defense of Key West, a copy of which was sent you March 28, 1896.

A lithograph of a type emplacement for the model 1896 10-inch disappearing carriage was sent you yesterday to St. Augustine. Notes accompanying this drawing give information concerning the storage and service of ammunition, and other details of the battery.

You are requested to submit detailed plans and estimates for the work above contemplated, as a basis for an allotment and for authority to begin the work.

The question of so advertising the work as to secure competitive bids without giving undue publicity to the plans of defense, and also the manner of carrying on the work to the best advantage under the clause of the act above referred to, are reserved for further consideration. What is now desired is that the plans of the work be in readiness, so that when begun, it may be carried forward without delay.

It is expected that the appropriations covering the amounts to be pledged will be made at the next session of Congress, and that the work will be completed by the end of the next calendar year.

Very respectfully,

Your obedient servant,

A. H. ...
Acting Chief of Engineers.

16485.

U. S. Engineer Office
New York City
Oct 25 1896

Brig. Genl. W. P. Craighie
Chief of Engineers U. S. Army
Washington D.C.

General

I have the honor to submit plans estimates specifications and other papers relating to the construction of a battery for 16 = 12 inch mortars and emplacements for 4 = 10 inch and 2 = 8 inch high power guns on disappearing carriages at Key West, Florida.

Careful consideration has been given to the instructions issued and to the drawings and other details transmitted with a view of adapting the proposed structure to their respective sites and to the general conditions of defense as set forth in the report of the Board of Engineers under date of April 3rd 1894. -

The Board carefully considered the questions of the defense of Key West, and the works were planned with a view of an attack from the Southwest. The question of the improvement of the North West Channel may in time cause a revision of the plans, &c. &c. now contemplated.

The problem of defending Key West (with its numerous channels) against Artillery attack by a hostile fleet is one not easy of solution within ordinary limits of expense. Situated as it on one of the many small coral islands, or keys, that separate the Atlantic from the Gulf, it is of especial importance as a naval rendezvous & coaling station. It commands the shortest passageway between these two bodies of water, and by reason of its peculiar location it must always be of great value as a harbor of refuge for our own vessels. This is particularly emphasized by the fact of instructions having been issued, through the Department, at the request of the Navy Department to estimate the cost of providing two channels to Key West, with a depth of not less than 30 feet. No definite instructions were received in regard to these proposed channels, and it may be assumed that it was intended to open deep water communication between the two bodies of water.

Now as to the site of the proposed works. Like all of the keys, the one in question is very low and flat.

The highest point in the island, and that in the City of Key West has an elevation of thirteen feet above M.S.W., the mean elevation being of course much less. Being a coral reef the surface is generally uncovered, though in some instances there

is a slight covering of sand.

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This coral formation is very porous and it was therefore considered very desirable to determine what the seepage through it amounts to. In the case of the two sites of batteries now under consideration, it was necessary to settle this question before fixing the reference of the magazine floors, bottom of pits and foot of slopes. For the purpose indicated holes were dug on the reservation and in each case the water rose and fell with the tide. On one day the range extended from 0.6 feet below M. L. W. to 1.1 feet above, though the average range was found to be but slightly over 1 foot.

The mean elevation of the rocky surface at the north end of the reservation including the salt pond is about 1.4 feet above M. L. W.: and at the site of the South Battery it is about 3 feet above same reference.

In regard to the height of water due to storm tides, there appears to be a record of one in 1846 fifty years ago, that went above the reference 6 feet, as fixed by the Board for the floors of the magazines of the Matar Battery. I have been unable to find any authentic record of water having arisen to any such height since, and there-

fore assumed the same reference as that fixed by the Board.

In the mortar battery construction, it is suggested that the concrete wall at the base of the outer slopes be replaced by one of rubble. This is done as a matter of economy, as the estimated cost of the concrete wall is about \$35000, that of the rubble about one fourth that amount.

The brick wall in the south battery is left in its present position.

The reference of the floors of the magazines, ^{of this battery} is placed at (10) the same as fixed by the Board.

The Board considered the possible lines of approach as only from the southward, leaving out any prospective approach from the northward and the defence with artillery and sub-marine mines was carried out on three lines. - From the southward, beginning along the south shore ~~bank~~ and going to the west and north west the channels of approach are the south east channel: the main ship channel, the south west channel and the west channel, the latter two being practically one. The first entrance is so shallow as not to admit of the entrance of deep draught ships. The main ship channel

(5)
carries at least $28\frac{1}{2}$ feet throughout its length while the Southwest has a least depth of 30 feet. The report of the Indict Board referring to these channels states that the main ship channel is the best. Inquiry among the pilots and boatmen of long experience in these waters seemed to verify this statement, the principal reason being that the distance to sea by the main ship channel is only about one half that by the Southwest channel and that on entering by way of the former the ships would be obliged to run at half speed a shorter time than when making the passage through the latter. However the main ship channel beginning at a point $4\frac{1}{2}$ miles from Fort Taylor and continuing to a point $2\frac{1}{2}$ miles from the fort is comparatively narrow and difficult to navigate, and part of this narrow channel (where it runs through the "triangles") requires the most careful piloting for deep draught vessels. The Southwest channel while it has a minimum depth of $1\frac{1}{2}$ feet greater than that found in the main ship channel is yet more winding and tortuous than the latter and the point where it reaches the deep sea is $10\frac{1}{2}$ miles from Fort Taylor.

The project of the Board of Engineers for the defense of these channels contemplates the building of an-

placements for 4 - 10" and 2 - 8" in the South battery: two mortar batteries: modification of the Martello towers and 2 - 12" guns in Fort Taylor. For economical reasons the mounting of these latter two was changed from lifts as originally projected, to disappearing carriages.

The sectors of fire of the guns in the South battery have been increased as shown on the drawings so as to accord with the suggestions indicated on the lithographic sheet of June last as applicable to the 10 inch guns.

The general lines of the interior crests of the two faces of this South battery are the same as those proposed by the Board.

The presence of many of those coral formations known as "yellow heads" on the front ^{area} seems to preclude the approach of deep draught vessels, other than by the channels above designated. - To approach any near area where the coast survey charts seem to indicate the absence of these formations would bring the vessels under direct and heavy fire from the batteries. It is considered from these conditions and from the general lines of the work that no danger might be apprehended from blunt round fire from the Southward.

In its report of April 3^d 1894 - The Board state
"Unfortunately the near vicinity of deep water both
"on the north and south would render it impossible
"at reasonable expense to give absolute security against
"bombardment, if the port were made a
"great naval station offering a sufficient inducement
"to an enemy possessing a superior fleet
"to incur the risk of serious loss to effect its destruction.
"All that can be judiciously attempted here
"now is to provide fortifications sufficient to make
"Key West a port of refuge to the limited extent
"admitted above."

"There is a very large area in the North West
"Passage and Man of War Harbor having a depth
"of 18 feet or more, but existing conditions forbid
"an attempt to afford reasonable security against
"bombardment through this whole extent. There is
"however a harbor area of 250 acres northward of
"an east and west line drawn through Fort Taylor
"in which the depth of water is 24 feet or over,
"and no point of which is less than five miles from
"the nearest position which could be occupied by a
"bombarding fleet lying in the Gulf of Mexico north
"of the Shoals. This harbor area is two miles long
"and its middle point will be six miles from an

' enemy's fleet in that position. * * * * But the Board
 ' does not consider that the importance of Key West
 " will justify an expenditure sufficient to keep at a
 ' distance of five miles from Fort Taylor or any dis-
 ' tance approaching it; and it accordingly limits its
 ' recommendation to an armament which it believes
 " will be able to inflict injuries exceeding the advanta-
 " ges.

With this view the work projected covers all channels of
 approach from the southward. The 10" gun on right flank
 of the south battery (No. 1) is the only one that bears
 upon the north west channel. In the present condition
 of the improvement nothing but very light draught ships
 can cross the bar at the northward entrance to that ch-
 nel, and it is presumed that no decided change will
 take place in the near future. No doubt the possibility
 of direct attack from the northward ^{with deep draught ships} were duly consid-
 ered by the Board, and with that view protection was con-
 sidered given from the Southeast around by west and approach-
 ing the north west. At the time of the consideration of the
 project for defence the project of the improvement of the
 north west channel had been under way under specific
 appropriations.

If it be considered that the opening of the north west chan-
 nel will be an accomplished fact an admitting the en-

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 have of deep draught war vessels, there will be no protection for the batteries now proposed from direct base fire, and a revision of the project for defence under the conditions will be necessary. An inspection of the little chart showing proposed fortifications at Key West will explain this reference.

The drawings and estimates herewith appear to be in accordance with the project of the Board. The works being adapted, or at least so considered to their respective sites. -

On account of the expense attending the construction of the mortar battery, due to the extensive embankments required (that is of fill over the excavation) and the fact that the proximity of the rocky surface, enabling the walls to be well founded, has caused me to keep the reference of the floor as low as was consistent with safety.

The following estimates for construction are presented.

Gun Battery

Excavation in sand etc	1750 yds at 40¢	700.00
" old concrete	320 cu. yds. " 3.00	960.00
Concrete including boulders	29309 cu. ft. @ 8.00	234472.00
Sand in excess of excavation	72771 cu. yds. @ 40¢	29108.40
Gravel	44500 cu. yds. @ 10¢ per 1000	4450.00
Steel Beams, plates &c.	66676 lbs at 3¢	2000.28
Sundries, including doors, operating tubes, rollers, bolts, railing, electric lighting plant		15000.00
		<u>282685.68</u>

Carried forward
Contingencies 10%

282685.68
282685.7
\$ 310,954.25

Mortar Battery

Sixteen - 12" Mortars.

Excavation Sand	350 Cu Yds @ 40¢	140.00
" Coral rock	825 " " @ 2¢	1650.00
Fill Sand	180,326 " " @ 40¢	72130.40
" Loom	2,274 " " @ 40¢	909.60
Concrete	16,750 " " @ 8¢	134,000.00
Rip Rap	2,953 " " @ 3¢	8,869.00
Steel Branes	81,500 lbs @ 3¢	2445.00
Brick	21,000 @ \$10 per M.	210.00
Sundries, including Lighting Plant, Drainage, Spraying tubes, wiring, Doors, Cut Stone &c &c.		15000.00
Anchor Bolts	58,067 lbs @ 6¢	<u>3484.00</u>
		238,838.00
		<u>238838</u>
Contingencies 10%		262,721.00
Total, Mortar Battery		

Gun Battery

Total, Gun Battery & Mortar Battery,

310,954.
\$ 573,676.

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There are forwarded herewith drawings specifications & and it is respectfully requested if the plans etc. meet with approval that blue prints be furnished me as I have had no facilities here for doing the work. If however they be sent under register- ed cover to me at St Augustine I have facilities there for taking any number of copies.

I enclose also in case of approval requests for printing specifications and advertising in certain news papers.

I am indebted to Lieut Mezler and Lieut Johnston for assistance in the preparation of the plans &.

Very Respectfully
Yours Truly.

A. H. H. Bryant
U. S. Corps of Engineers

12 inclosures
(Maps drawings etc
in separate packages)

1071
SUBJECT: Gun battery, Key West, Fla.



Office of the Chief of Engineers,
United States Army.

Washington, D. C. October 31, 1896.

Lieut. Col. W. H. H. Benyaurd,
Corps of Engineers,
St. Augustine, Fla.

Colonel:

Your plans for a gun battery at Key West are approved.

The design for a mortar battery submitted by you, is being modified in this office to reduce cost and to permit a portion of the battery to be built at a time if necessary, and the new design will be sent to you as soon as practicable, and in time for inspection by authorized bidders. Your specifications are being modified to suit these changes. They will be so drawn as to permit the construction of all or a portion of the battery, according to the amount of the bid and the funds available.

The advertisement should be inserted in the authorized papers without delay and the specifications printed as soon as practicable after their receipt back by you.

The date for opening the bids has been set at November 24, 1896, in accordance with the wishes of the Secretary of War and by his authority.

Very respectfully your obedient servant,

16435

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Inclos. 5 & 6 in sep. roll.

✓ / / / / / / / / / /
Acting Chief of Engineers.

WAR DEPARTMENT

Oct 1.25/26.

Leet 07/11/11

at New Market, Va.

Est. cost of Green Bay \$310,954.23

Pinelos 7-10, 13 in chgs. Files, Dr. 76, 188 573676.07

Mayo Blue Pulvato 1899

the drawings
of 9 and 30

✓ 9 Sheds, E.D.
No. 5-11 Tracings
12 & 13

Disc - 1

Key West Barracks, Florida,
July 7, 1899.

The Adjutant General,
Department of the Gulf,
Atlanta, Georgia.

Sir:

In Compliance with G.O.No.68, A.G.O., 1897, and in compliance with Department Circular, August 18th, 1898, I have the honor to submit the following Quarterly Report:

The defenses of this place comprise the "South Battery", Mortar Battery, Fort Taylor and "North Battery".

The South Battery contains the disappearing mounts, two (2) Crozier-Buffington and four (4) U.S., and two (2) Q.F. Armstrong 4.7".

The Mortar Battery contains eight (8) XII" B.L. Mortars on U.S. Carriages.

Fort Taylor has been razed and emplacements for two (2) XII" Barbette have been completed. The mounting of these guns and carriages is to be accomplished by this command. The material for this work is now awaited. This battery has not yet been turned over.

In the North Battery there are three (3) VIII" M.L.R. in barrette and alongside is an uncompleted emplacement for two (2) R.F. Guns. Emplacement for two (2) R.F. Guns is contemplated on the right of the XII" Battery in Fort Taylor.

"South Battery":

General Condition: The construction is far from being completed. A small part only of the exterior slope has been filled in. This work is being done by contract and is executed by fits and starts. Some filling will be done upon the Mortar Battery for a few days and then that will be left to itself and filling will then be done upon the South Battery. Such periods of activity are followed by periods of rest during which nothing is done. Not a wheel has been turning for some days. A construction railroad is laid upon the superior slope of the South Battery. This prevents any use of the guns. A stationary engine is fixed near the North X" Rifle and a locomotive runs along the aforementioned track. Both these engines cause much dirt and annoyance to Gun Commanders.

The material used for the exterior slope of this Battery is pulverized coral rock dug out of the sea. When dry this material may be reduced to a powder by rubbing it between the fingers, and it is the most unpromising material for the covering of ~~the~~ a Battery. I am told that it is "hoped" that this moist material will harden in time. This seems to me doubtful, but almost any material would have time to petrify at the rate of speed now in practice by the constructors.

Magazine: No thorough inspection can be made of the magazine as electric lights are not yet in place. I have already stated the state of affairs in the magazine containing smoke-powder.

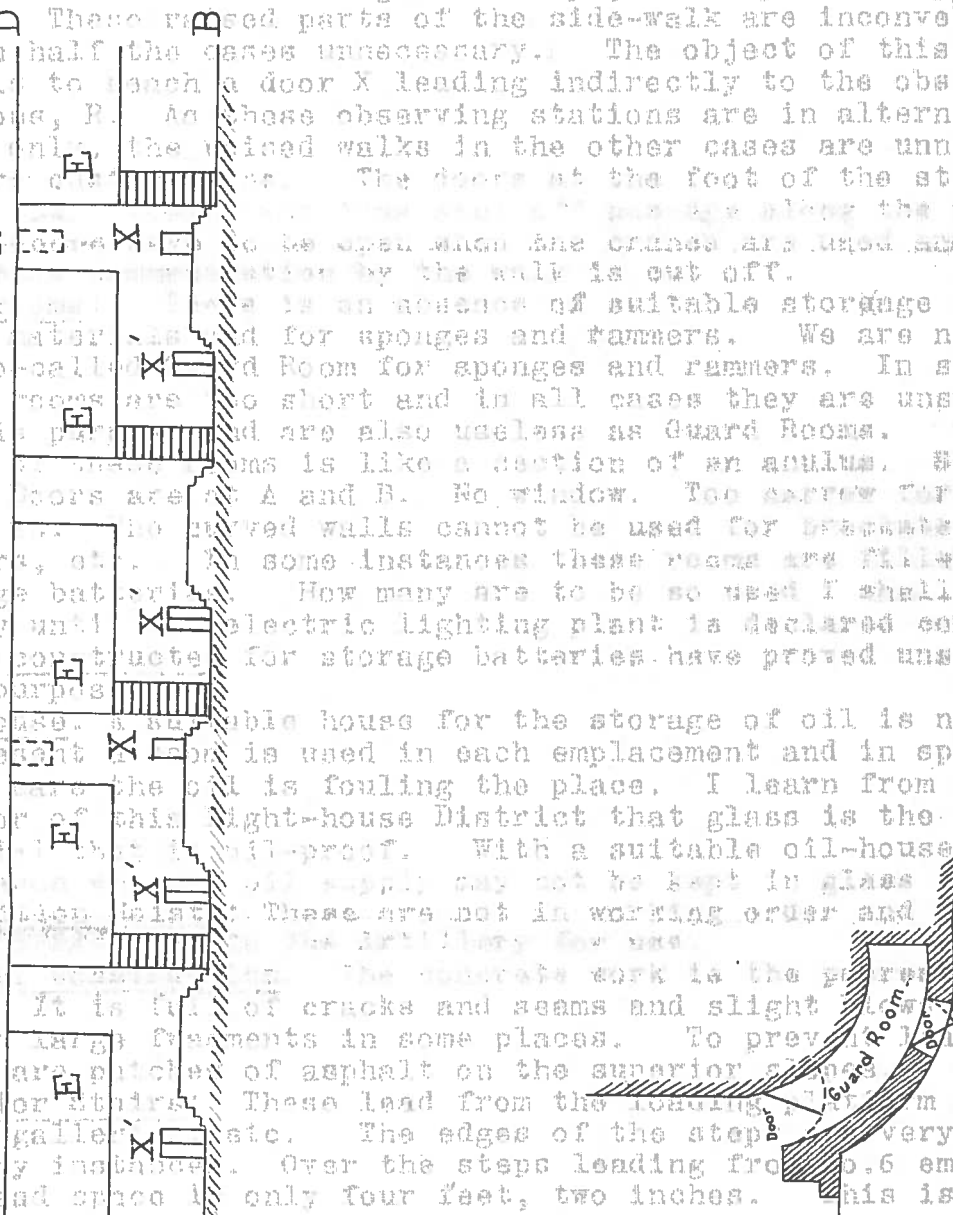
Communications: The emplacements of the disappearing guns are completely isolated from one another. There should be a suspended iron foot-way around each traverse. The sketch below, not drawn to scale, shows the rear communications. To pass from B to E one has to descend a flight of steps to a side-walk, then down a flight of four or five steps, then along a walk to the foot of a flight of steps, then up to the platform at E. These raised parts of the side-walk are inconvenient and in half the cases unnecessary. The object of this raised walk is to reach a door X leading indirectly to the observing stations, R. As these observing stations are in alternate traverses only, the raised walks in the other cases are unnecessary and are not shown. The doors at the foot of the steps

are to be open when the cranes are used and the communication by the walk is cut off. There is an absence of suitable storage place for spare water, for sponges and rammers. We are now using the so-called Room for sponges and rammers. In some cases these rooms are so short and in all cases they are unsuitable to this purpose and are also useless as Guard Rooms. The shape of these rooms is like a section of an annulus. See figure. Doors are at A and B. No window. Too narrow for any sleep. The curved walls cannot be used for brackets to hang rammer, etc. In some instances these rooms are filled with storage batteries. How many are to be so used I shall not be able to say until the electric lighting plant is declared completed. The rooms for trucks for storage batteries have proved unsuited for that purpose.

Oil-house: A suitable house for the storage of oil is needed. At present it is used in each emplacement and in spite of every care the oil is fouling the place. I learn from the Inspector of this Light-house District that glass is the only material that is oil-proof. With a suitable oil-house I see no reason why oil supply can not be kept in glass carboys. Ammunition: There are not in working order and are not

used. The concrete work is the poorest I have seen. It is full of cracks and seams and slight pieces will loosen large fragments in some places. To prevent leaking there are patches of asphalt on the superior steps. Interior stairs: These lead from the loading platform to the lower gallery, etc. The edges of the steps are very ragged in many instances. Over the steps leading from the 6.6 emplacement the head space is only four feet, two inches. This is ridiculously inadequate.

Water supply: There is no water supply introduced and I understand none is contemplated. It is absolutely necessary that



Magazines: No thorough inspection can be made of the magazines as electric lights are not yet in place. I have already reported the state of affairs in the magazine containing smokeless powder.

Communications: The emplacements of the disappearing guns are completely isolated from one another. There should be a suspended iron foot-way around each traverse. The sketch below, not drawn to scale, shows the rear communications. To pass from E to E one has to descend a flight of steps to a side-walk, then down a flight of four or five steps, then along a walk to the foot of a flight of steps, then up to the platform at E. These raised parts of the side-walk are inconvenient and in half the cases unnecessary. The object of this raised walk is to reach a door X leading indirectly to the observing stations, R. As these observing stations are in alternate traverses only, the raised walks in the other cases are unnecessary and are obstructions. The doors at the foot of the steps at X' open outward and thus shut off passage along the walk. These doors have to be open when the cranes are used and in that case communication by the walk is cut off.

Storerooms: There is an absence of suitable storage place for spare materials and for sponges and rammers. We are now using the so-called Guard Room for sponges and rammers. In some cases these rooms are too short and in all cases they are unsuitable to this purpose and are also useless as Guard Rooms. The shape of these rooms is like a section of an annulus. See figure. Doors are at A and B. No window. Too narrow for men to sleep in. The curved walls cannot be used for brackets to hang rammers, etc. In some instances these rooms are filled with storage batteries. How many are to be so used I shall not be able to say until the electric lighting plant is declared completed. The rooms constructed for storage batteries have proved unsuited for that purpose.

Oil-house. A suitable house for the storage of oil is needed. At present a room is used in each emplacement and in spite of every care the oil is fouling the place. I learn from the Inspector of this Light-house District that glass is the only material that is oil-proof. With a suitable oil-house I see no reason why our oil supply may not be kept in glass carboys.

Ammunition Hoists: These are not in working order and have not been turned over to the Artillery for use.

General Construction: The concrete work is the poorest I have seen. It is full of cracks and seams and slight blows will loosen large fragments in some places. To prevent leaking there are patches of asphalt on the superior slopes.

Interior Stairs: These lead from the loading platform to the lower galleries, etc. The edges of the steps are very ragged in many instances. Over the steps leading from No. 6 emplacement the head space is only four feet, two inches. This is ridiculously inadequate.

Water Supply: There is no water supply introduced and I understand none is contemplated. It is absolutely necessary that

a supply of fresh water should be piped to the guns for the washing of the bores and for the supply of troops. Drainage from the slopes and platforms could not be used as the oil would render it unfit for drinking.. Cisterns with a power pump must be provided.

Drainage: There should be a drain with an ample grated cover so situated as to allow the slush and dirt from the bore to fall into it.

Speaking Tubes: These are of the common hotel pattern with whistle attachment. It seems to me that it would have been wise to adopt a megaphone mouth-piece with base flush with wall. This would do away with the necessity of having alternately to cock the ear and mouth to the tube. The speaking tube system is superior to the telephone in clearness and simplicity where installed in the present case.

Observing Stations: These are inconveniently planned. The speaking tubes are located less than breast high in the wall on the side of the pedestal from the observer. There are no draw-out tubes and so the observer will have to step from his instrument and assume an awkward and cramped position while sending or receiving a message. An assistant continually at the speaking tubes would probably be in the way of the observer and his instrument. The present arrangement is therefore unsatisfactory.

Electric Plant: Not yet installed. Workmen are engaged in boring holes for conduits and brackets. A 32-horse power oil engine is in place for use with dynamo but this engine has not been accepted and it has failed to attain the horse power claimed for it.

Range Finders: Two of type B on hand. The screws for setting the instrument for height grind against the barrel and prevent the corrections at either extremity of the scale. No action has been taken on plans submitted from this Post over a year ago on the subject of a Range Tower for a type "A" Position Finder.

Plotting Boards, etc: As yet there are no plotting boards, tables, shelving, brackets for instruments, or other accessories and necessities. I am unable to say what is contemplated in this direction.

South Q. F. Battery:

This is continuous with the South Battery and I think is pronounced finished. The magazines and fuse-rooms are dry but lack furniture. No brackets for the fixed ammunition or implements are provided and the cases and projectiles have now to be kept in the rough boxes in which they were shipped.

Re-Loading Tools: Are entirely wanting.

Primers and Cases: Some empty cases and spare primers are needed for instruction purposes. There are no means at hand, for testing the electric firing apparatus.

Sub-Calibre Practice: Should be provided for that the use of these guns may be learned.

Armament: Two (2) VIII" B.L.R. on Crozier-Buffington carriages; Four (4) X" B.L.R. on disappearing mounts; two (2) Q.F.4.7" Arm-

Strong's en barbette. The VIII" and X" guns have a breech mechanism that opens with two cranks, a system now rather out of date.

Emplacement No. 1:

Armstrong Q.F. 4.7" No. 11002.

Electric firing circuit not in contact at brackets because the spring pin does not reach lower bracket. A spring cotter is missing from traversing wheel. The lower right hand shelf below the dry battery and spare cable is empty. Do not know what belongs there and the pamphlet does not explain. No night sight seems to be provided.

Emplacement No. 2:

Armstrong Q.F. 4.7" No. 11003.

Magazine as in No. 1; no night sights:

Emplacement No. 3:

X" B.L.R. No. 46. Bad rust spot, possibly a deep pit, in surface of bore, upper right side about middle of rifling. Casting of dust guard and traversing gear ^{broken} not important. Pitting from rust on threads of breech.

Emplacement No. 4:

X" B.L.R. No. 65. Very deep pits from rust on lower seven lands at muzzle where temporary tomplon was fitted for transportation. Rust stains on rifling. Burr on thread of breech block; does not interfere with working of block.

Emplacement No. 5:

X" B.L.R. No. 64. Link of left retracting chain pulled open June 8th, 1899. Steps to lower galleries very imperfect. Right stop screw too long.

Emplacement No. 6:

X" B.L.R. No. 34. Bolt missing from front sighting platform on cylinder. Fine pitting on breech block. Wire netting of gunners platform never set up; had been broken off—circumstances not known. Only four feet, two inches, of head space over steps leading to lower galleries. Stuffing box on left cylinder leaks slightly. Roof of lower gallery and small room showed leakage after a light rain. No "Guard Room" provided. See "note" below.

Emplacement No. 7:

VIII" B.L.R. No. 40. Retraction gear not in place; has been sent off for adjustment as it would not perform its office. Steps to lower gallery imperfect. Roof of gallery or passage leaks. Glacis in front of muzzle has a sudden turn up to cover muzzle, making the interior crest weak at this point.

Emplacement No. 8:

VIII" B.L.R. No. 39. Slight rust stains in some of the grooves. Ratchet teeth 5, 6 and 7, left side, bruised—no importance—probably done in assembling carriage. Retraction gears as in Emplacement No. 7. Glacis as in Emplacement No. 7. "Guard Room" so short that door cannot be closed when staves are in it. Gun does not depress easily.

Sights: Open sights had to be filed down to fit brackets. Two on hand. Three telescopic sights on hand and are defective. In moving the eye laterally the vertical wire passes over one whole division on the deviation scale.

(5)

NOTE:- Emplacement No. 6, X" B.L.R., in salient angle, is very cramped. The gun can be loaded when the breech is opposite the steps only. Even in this position the rammer staff extends beyond the guard-rail so far that the handles can not be grasped by the cannoneers.

GRADUATIONS of the Azimuth circles are not numbered in any emplacement in this battery.

Mortar Battery-

General Condition: Work upon this Battery is being accomplished by contract. A large pile of coral mud has been dumped in front of the magazines and galleries but much of the concrete work remains uncovered. No work whatever is in progress at the present writing as regards filling in.

Pits: Are two in number and contain 4 mortars each. These pits are so small that the mortar beds lack but two feet of tangency with each other. To load the mortars requires that the breeches of the two forward mortars be pointed toward the center of the pit while the two rear mortars are placed parallel with the sides of the pit. In the case of the first pair the position necessary for loading brings the rear end of the sponges and rammers towards each other and thus necessitates some care in running up the shell trucks. There is just room for two trucks to pass the mortars abreast provided the traversing gear is not in operation.

Brackets for sponges, etc: These are greatly ^{needed} against the side walls. There is no room in the pits for placing these implements on the floor. There must be a place to hang them out of the way when not in use. This is a necessity.

Storage Room: No convenient place has been provided for the tool ^{chests and armament} chests. At present they are placed in the passage under the trolleys where they are in the way of the trucks. This lack of convenient and necessary storage space seems a failing in all the modern batteries of which I have knowledge. A ship of war, constructed with as little circumspection, would be compelled to leave most of her equipment on the dock when she sailed away. Sponges and rammers are at present hung in makeshift racks in the passage to the plotting room. This passage is not suitable for the purpose as the presence of these implements very seriously obstructs it, being only wide enough for the easy passage of one man.

Water Supply: There is no provision for fresh water supply. As in the case of all batteries this is essential for drinking and cleaning purposes.

Drainage: Is defective. Emplacements have to be frequently bailed out. The tide appears to have some effect. There are no strainers provided for the drain holes.

Electric Plant: Not yet in working order. A storage battery, ten-horse power oil engine and dynamo are in place.

Plotting Boards are not in position and no "furniture" provided, such as shelves, racks, etc.

Armament: Eight XII" B.L. Mortars on U. S. carriages.

Azimuth Circles: Graduations not numbered, and verniers not attached.

Right Pit-

Emplacement No. 1: XII" B. L. Mortar No. 41. Breech-block much pitted by rust.

Emplacement No. 2: XII" B. L. Mortar No. 42. Two bruises in lands near muzzle. Slight rust stain in chamber. Breech-block crank handles and translating screw all badly pitted from rust.

Emplacement No. 3: XII" B. L. No. 44. Breech-block very badly pit-

ted with rust stains. Rust pit in bottom of forcing cone.

Emplacement No. 4: XII" B.L.Mortar No.40. Breech-block and appendages thereto very badly pitted from rust.

Left Pit-

Emplacement No.5: XII" B.L.Mortar No.25. Breech-block rust stained in a few places. Lands near muzzle and extending about a foot from the muzzle have a file-like appearance. No gas check.

Emplacement No.6: XII" B.L.Mortar No.43. Slight bruise on lands near muzzle. Breech-block rust pitted.

Emplacement No.7:

XII" B.L.Mortar No.26. Breech-block in excellent order. Lands have rough surfaces. No gas check.

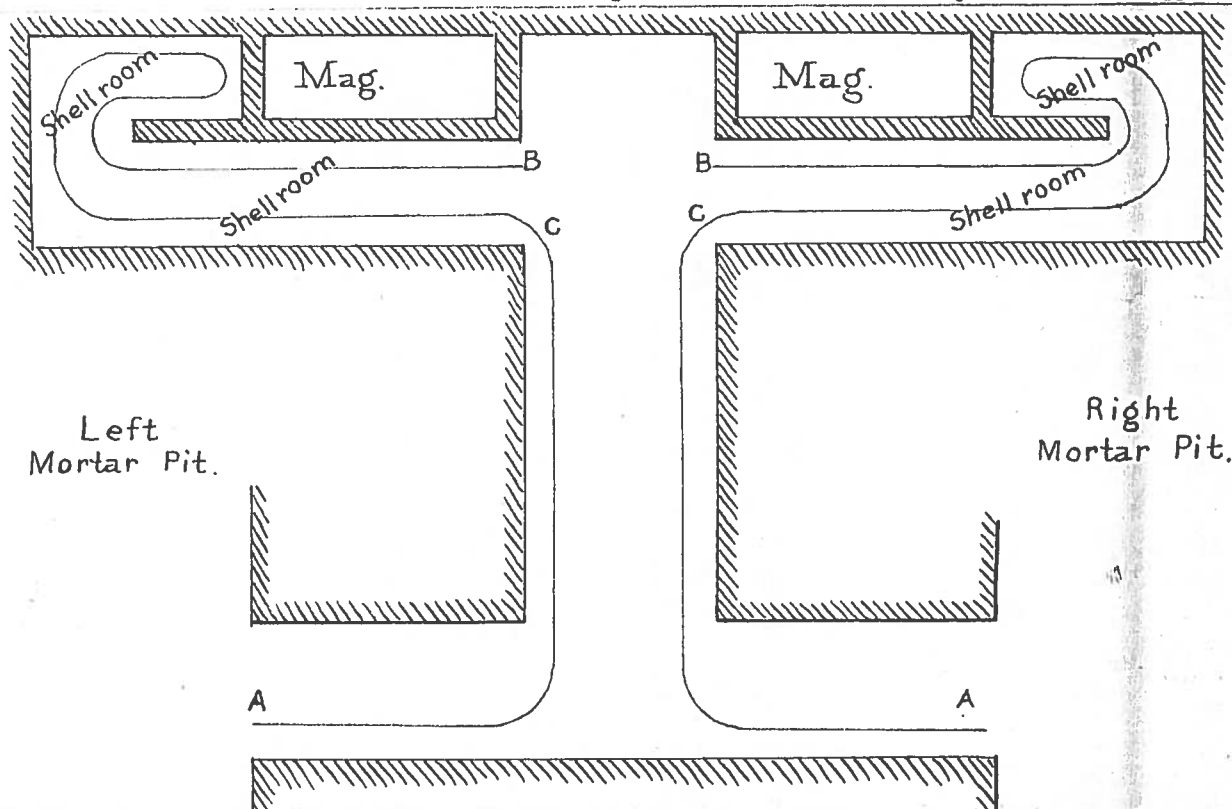
Emplacement No.8: XII" B.L.Mortar No.24. Lands have file-like surface for about two feet from muzzle. Threads of breech-block slightly pitted and mushroom head also. No gas check.

Magazines: Have a disagreeable atmosphere due to dampness or lack of ventilation. On account of darkness thorough examination is impracticable.

Observing Stations: Not yet constructed.

Re-Locating and Plotting Rooms: Poorly ventilated. Electric fans will be absolutely necessary in these rooms.

Trolleys: The trolley tracks extend from "A" and terminate at "B". To reach the point "C" the trolley must pass completely around two galleries. This is ridiculous. There should be connection between "B" and "C", with a switch at "C". See sketch, which is not drawn to scale. The red line shows the plan of the trolley track. This



passage is the only cover provided for the ninety six men comprising the detachments. That number will find little room in this space.

Recommendations: I would recommend that shallow upright closets with sliding doors be built just inside the entrance to the magazine traverse against the wall and opposite the trolley track. If the closets were planned to hold the contents of the "tool-chests" and the "armament chests" (omitting the buckets) it would do away with these chests which are now in the way and ~~stand~~ seriously so. Or there is still time to construct storage rooms behind the plotting rooms.

Oil House: Is needed for the storage of oil, oil waste, cleaning materials and the greasy rags used about the pieces.

Latrines-

No provision has been made for urinals or water-closets in either the Disappearing Battery or the Mortar Battery. Nor have I observed any provisions of this nature about the XII" Battery at Fort Taylor. But as the latter has not yet been turned over and as I have not seen the plans I cannot speak positively. After the magazines, suitable latrines are of next importance. That they should be omitted is incomprehensible.

Respectfully submitted,

Hamilton Rowan

Captain 1st Artillery,

Commanding Post.

16485
162 (Copy)

North West Bkto.
Sta.
July 7, 1899.

Comdg. Officer
(Capt. Hamilton Brown).

Submits quarterly re-
port of inspection of
defensive works at Key
West.

(See subm.)

Original returned by Col. of Engs,
informally, to effects of the change,
Aug. 5, 1899.

Sketches sent in plain tube, Aug. 9, 1899.

16435
1071
SUBJECT: Gun battery, Key West, Fla.



Office of the Chief of Engineers,
United States Army.

Washington, D. C. October 31, 1896.

Lieut. Col. W. H. H. Benyaard,
Corps of Engineers,
St. Augustine, Fla.

Colonel:

Your plans for a gun battery at Key West are approved.

The design for a mortar battery submitted by you, is being modified in this office to reduce cost and to permit a portion of the battery to be built at a time if necessary, and the new design will be sent to you as soon as practicable, and in time for inspection by authorized bidders. Your specifications are being modified to suit these changes. They will be so drawn as to permit the construction of all or a portion of the battery, according to the amount of the bid and the funds available.

The advertisement should be inserted in the authorized papers without delay and the specifications printed as soon as practicable after their receipt back by you.

The date for opening the bids has been set at November 24, 1896, in accordance with the wishes of the Secretary of War and by his authority.

Very respectfully your obedient servant,

16435
4

W. H. H. Benyaard
Acting Chief of Engineers.

Inclos. 5 & 6 in sep. roll.

16485
WAR DEPARTMENT

WAR DEPARTMENT

New York
Oct 25/16

Bernard
Lieut. Col. M.A.

McCurtis Means

estimates of expense
and then proceeds
relating to the construction
of a battery for 16-
12 inch mortars
& emplacement
for 4 - 10 inch
and 2 - 8 inch high
power guns in
dredging canals
at Reg. West 344.

Est. cost of gun battery 310954.5
of mortar battery 262721.82
Batteries 7-10, 13 in. 5000, 2-7.5, 14, 18, 575676.27
" " 12, 15, 16, 18, 20, 24, 28, 30, 32, 36, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1002, 1004, 1006, 1008, 1010, 1012, 1014, 1016, 1018, 1020, 1022, 1024, 1026, 1028, 1030, 1032, 1034, 1036, 1038, 1040, 1042, 1044, 1046, 1048, 1050, 1052, 1054, 1056, 1058, 1060, 1062, 1064, 1066, 1068, 1070, 1072, 1074, 1076, 1078, 1080, 1082, 1084, 1086, 1088, 1090, 1092, 1094, 1096, 1098, 1100, 1102, 1104, 1106, 1108, 1110, 1112, 1114, 1116, 1118, 1120, 1122, 1124, 1126, 1128, 1130, 1132, 1134, 1136, 1138, 1140, 1142, 1144, 1146, 1148, 1150, 1152, 1154, 1156, 1158, 1160, 1162, 1164, 1166, 1168, 1170, 1172, 1174, 1176, 1178, 1180, 1182, 1184, 1186, 1188, 1190, 1192, 1194, 1196, 1198, 1200, 1202, 1204, 1206, 1208, 1210, 1212, 1214, 1216, 1218, 1220, 1222, 1224, 1226, 1228, 1230, 1232, 1234, 1236, 1238, 1240, 1242, 1244, 1246, 1248, 1250, 1252, 1254, 1256, 1258, 1260, 1262, 1264, 1266, 1268, 1270, 1272, 1274, 1276, 1278, 1280, 1282, 1284, 1286, 1288, 1290, 1292, 1294, 1296, 1298, 1300, 1302, 1304, 1306, 1308, 1310, 1312, 1314, 1316, 1318, 1320, 1322, 1324, 1326, 1328, 1330, 1332, 1334, 1336, 1338, 1340, 1342, 1344, 1346, 1348, 1350, 1352, 1354, 1356, 1358, 1360, 1362, 1364, 1366, 1368, 1370, 1372, 1374, 1376, 1378, 1380, 1382, 1384, 1386, 1388, 1390, 1392, 1394, 1396, 1398, 1400, 1402, 1404, 1406, 1408, 1410, 1412, 1414, 1416, 1418, 1420, 1422, 1424, 1426, 1428, 1430, 1432, 1434, 1436, 1438, 1440, 1442, 1444, 1446, 1448, 1450, 1452, 1454, 1456, 1458, 1460, 1462, 1464, 1466, 1468, 1470, 1472, 1474, 1476, 1478, 1480, 1482, 1484, 1486, 1488, 1490, 1492, 1494, 1496, 1498, 1500, 1502, 1504, 1506, 1508, 1510, 1512, 1514, 1516, 1518, 1520, 1522, 1524, 1526, 1528, 1530, 1532, 1534, 1536, 1538, 1540, 1542, 1544, 1546, 1548, 1550, 1552, 1554, 1556, 1558, 1560, 1562, 1564, 1566, 1568, 1570, 1572, 1574, 1576, 1578, 1580, 1582, 1584, 1586, 1588, 1590, 1592, 1594, 1596, 1598, 1600, 1602, 1604, 1606, 1608, 1610, 1612, 1614, 1616, 1618, 1620, 1622, 1624, 1626, 1628, 1630, 1632, 1634, 1636, 1638, 1640, 1642, 1644, 1646, 1648, 1650, 1652, 1654, 1656, 1658, 1660, 1662, 1664, 1666, 1668, 1670, 1672, 1674, 1676, 1678, 1680, 1682, 1684, 1686, 1688, 1690, 1692, 1694, 1696, 1698, 1700, 1702, 1704, 1706, 1708, 1710, 1712, 1714, 1716, 1718, 1720, 1722, 1724, 1726, 1728, 1730, 1732, 1734, 1736, 1738, 1740, 1742, 1744, 1746, 1748, 1750, 1752, 1754, 1756, 1758, 1760, 1762, 1764, 1766, 1768, 1770, 1772, 1774, 1776, 1778, 1780, 1782, 1784, 1786, 1788, 1790, 1792, 1794, 1796, 1798, 1800, 1802, 1804, 1806, 1808, 1810, 1812, 1814, 1816, 1818, 1820, 1822, 1824, 1826, 1828, 1830, 1832, 1834, 1836, 1838, 1840, 1842, 1844, 1846, 1848, 1850, 1852, 1854, 1856, 1858, 1860, 1862, 1864, 1866, 1868, 1870, 1872, 1874, 1876, 1878, 1880, 1882, 1884, 1886, 1888, 1890, 1892, 1894, 1896, 1898, 1900, 1902, 1904, 1906, 1908, 1910, 1912, 1914, 1916, 1918, 1920, 1922, 1924, 1926, 1928, 1930, 1932, 1934, 1936, 1938, 1940, 1942, 1944, 1946, 1948, 1950, 1952, 1954, 1956, 1958, 1960, 1962, 1964, 1966, 1968, 1970, 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022, 2024, 2026, 2028, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048, 2050, 2052, 2054, 2056, 2058, 2060, 2062, 2064, 2066, 2068, 2070, 2072, 2074, 2076, 2078, 2080, 2082, 2084, 2086, 2088, 2090, 2092, 2094, 2096, 2098, 2100, 2102, 2104, 2106, 2108, 2110, 2112, 2114, 2116, 2118, 2120, 2122, 2124, 2126, 2128, 2130, 2132, 2134, 2136, 2138, 2140, 2142, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160, 2162, 2164, 2166, 2168, 2170, 2172, 2174, 2176, 2178, 2180, 2182, 2184, 2186, 2188, 2190, 2192, 2194, 2196, 2198, 2200, 2202, 2204, 2206, 2208, 2210, 2212, 2214, 2216, 2218, 2220, 2222, 2224, 2226, 2228, 2230, 2232, 2234, 2236, 2238, 2240, 2242, 2244, 2246, 2248, 2250, 2252, 2254, 2256, 2258, 2260, 2262, 2264, 2266, 2268, 2270, 2272, 2274, 2276, 2278, 2280, 2282, 2284, 2286, 2288, 2290, 2292, 2294, 2296, 2298, 2300, 2302, 2304, 2306, 2308, 2310, 2312, 2314, 2316, 2318, 2320, 2322, 2324, 2326, 2328, 2330, 2332, 2334, 2336, 2338, 2340, 2342, 2344, 2346, 2348, 2350, 2352, 2354, 2356, 2358, 2360, 2362, 2364, 2366, 2368, 2370, 2372, 2374, 2376, 2378, 2380, 2382, 2384, 2386, 2388, 2390, 2392, 2394, 2396, 2398, 2400, 2402, 2404, 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2420, 2422, 2424, 2426, 2428, 2430, 2432, 2434, 2436, 2438, 2440, 2442, 2444, 2446, 2448, 2450, 2452, 2454, 2456, 2458, 2460, 2462, 2464, 2466, 2468, 2470, 2472, 2474, 2476, 2478, 2480, 2482, 2484, 2486, 2488, 2490, 2492, 2494, 2496, 2498, 2500, 2502, 2504, 2506, 2508, 2510, 2512, 2514, 2516, 2518, 2520, 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2854, 2856, 2858, 2860, 2862, 2864, 2866, 2868, 2870, 2872, 2874, 2876, 2878, 2880, 2882, 2884, 2886, 2888, 2890, 2892, 2894, 2896, 2898, 2900, 2902, 2904, 2906, 2908, 2910, 2912, 2914, 2916, 2918, 2920, 2922, 2924, 2926, 2928, 2930, 2932, 2934, 2936, 2938, 2940, 2942, 2944, 2946, 2948, 2950, 2952, 2954, 2956, 2958, 2960, 2962, 2964, 2966, 2968, 2970, 2972, 2974, 2976, 2978, 2980, 2982, 2984, 2986, 2988, 2990, 2992, 2994, 2996, 2998, 3000, 3002, 3004, 3006, 3008, 3010, 3012, 3014, 3016, 3018, 3020, 3022, 3024, 3026, 3028, 3030, 3032, 3034, 3036, 3038, 3040, 3042, 3044, 3046, 3048, 3050, 3052, 3054, 3056, 3058, 3060, 3062, 3064, 3066, 3068, 3070, 3072, 3074, 3076, 3078, 3080, 3082, 3084, 3086, 3088, 3090, 3092, 3094, 3096, 3098, 3100, 3102, 3104, 3106, 3108, 3110, 3112, 3114, 3116, 3118, 3120, 3122, 3124, 3126, 3128, 3130, 3132, 3134, 3136, 3138, 3140, 3142, 3144, 3146, 3148, 3150, 3152, 3154, 3156, 3158, 3160, 3162, 3164, 3166, 3168, 3170, 3172, 3174, 3176, 3178, 3180, 3182, 3184, 3186, 3188, 3190, 3192, 3194, 3196, 3198, 3200, 3202, 3204, 3206, 3208, 3210, 3212, 3214, 3216, 3218, 3220, 3222, 3224, 3226, 3228, 3230, 3232, 3234, 3236, 3238, 3240, 3242, 3244, 3246, 3248, 3250, 3252, 3254, 3256, 3258, 3260, 3262, 3264, 3266, 3268, 3270, 3272, 3274, 3276, 3278, 3280, 3282, 3284, 3286, 3288, 3290, 3292, 3294, 3296, 3298, 3300, 3302, 3304, 3306, 3308, 3310, 3312, 3314, 3316, 3318, 3320, 3322, 3324, 3326, 3328, 3330, 3332, 3334, 3336, 3338, 3340, 3342, 3344, 3346, 3348, 3350, 3352, 3354, 3356, 3358, 3360, 3362, 3364, 3366, 3368, 3370, 3372, 3374, 3376, 3378, 3380, 3382, 3384, 3386, 3388, 3390, 3392, 3394, 3396, 3398, 3400, 3402, 3404, 3406, 3408, 3410, 3412, 3414, 3416, 3418, 3420, 3422, 3424, 3426, 3428, 3430, 3432, 3434, 3436, 3438, 3440, 3442, 3444, 3446, 3448, 3450, 3452, 3454, 3456, 3458, 3460, 3462, 3464, 3466, 3468, 3470, 3472, 3474, 3476, 3478, 3480, 3482, 3484, 3486, 3488, 3490, 3492, 3494, 3496, 3498, 3500, 3502, 3504, 3506, 3508, 3510, 3512, 3514, 3516, 3518, 3520, 3522, 3524, 3526, 3528, 3530, 3532, 3534, 3536, 3538, 3540, 3542, 3544, 3546, 3548, 3550, 3552, 3554, 3556, 3558, 3560, 3562, 3564, 3566, 3568, 3570, 3572, 3574, 3576, 3578, 3580, 3582, 3584, 3586, 3588, 3590, 3592, 3594, 3596, 3598, 3600, 3602, 3604, 3606, 3608, 3610, 3612, 3614, 3616, 3618, 3620, 3622, 3624, 3626, 3628, 3630, 3632, 3634, 3636, 3638, 3640, 3642, 3644, 3646, 3648, 3650, 3652, 3654, 3656, 3658, 3660, 3662, 3664, 3666, 3668, 3670, 3672, 3674, 3676, 3678, 3680, 3682, 3684, 3686, 3688, 3690, 3692, 3694, 3696, 3698, 3700, 3702, 3704, 3706, 3708, 3710, 3712, 3714, 3716, 3718, 3720, 3722, 3724, 3726, 3728, 3730, 3732, 3734, 3736, 3738, 3740, 3742, 3744, 3746, 3748, 3750, 3752, 3754, 3756, 3758, 3760, 3762, 3764, 3766, 3768, 3770, 3772, 3774, 3776, 3778, 3780, 3782, 3784, 3786, 3788, 3790, 3792, 3794, 3796, 3798, 3800, 3802, 3804, 3806, 3808, 3810, 3812, 3814, 3816, 3818, 3820, 3822, 3824, 3826, 3828, 3830, 3832, 3834, 3836, 3838, 3840, 3842, 3844, 3846, 3848, 3850, 3852, 3854, 3856, 3858, 3860, 3862, 3864, 3866, 3868, 3870, 3872, 3874, 3876, 3878, 3880, 3882, 3884, 3886, 3888, 3890, 3892, 3894, 3896, 3898, 3900, 3902, 3904, 3906, 3908, 3910, 3912, 3914, 3916, 3918, 3920, 3922, 3924, 3926, 3928, 3930, 3932, 3934, 3936, 3938, 3940, 3942, 3944, 3946, 3948, 3950, 3952, 3954, 3956, 3958, 3960, 3962, 3964, 3966, 3968, 3970, 3972, 3974, 3976, 3978, 3980, 3982, 3984, 3986, 3988, 3990, 3992, 3994, 3996, 3998, 4000, 4002, 4004, 4006, 4008, 4010, 4012, 4014, 4016, 4018, 4020, 4022, 4024, 4026, 4028, 4030, 4032, 4034, 4036, 4038, 4040, 4042, 4044, 4046, 4048, 4050, 4052, 4054, 4056, 4058, 4060, 4062, 4064, 4066, 4068, 4070, 4072, 4074, 4076, 4078, 4080, 4082, 4084, 4086, 4088, 4090, 4092, 4094, 4096, 4098, 4100, 4102, 4104, 4106, 4108, 4110, 4112, 4114, 4116, 4118, 4120, 4122, 4124, 4126, 4128, 4130, 4132, 4134, 4136, 4138, 4140, 4142, 4144, 4146, 4148, 4150, 4152, 4154, 4156, 4158, 4160, 4162, 4164, 4166, 4168,

United States Engineer Office,

Key West, Fla., February 28, 1898.

Brig. Gen. John M. Wilson,
Chief of Engineers, U. S. Army,
Washington, D. C.

General:-

I have the honor to report that Lieut. Col. A. S. Kimball, Deputy Quartermaster General, has entered into a contract for the shipment from Sandy Hook of the six guns intended for the Gun Battery here. The contract calls for the delivery of the guns on a scow or barge in the harbor. It has been arranged between Colonel Kimball and myself that I shall furnish this scow, have it towed to the breakwater, Fort Taylor, and unload the guns on to the breakwater. All charges up to and including the unloading to be paid by the Quartermaster's Department.

The estimated cost of transferring two 8-in. and four 10-in. guns and eight 12-in. mortars from the landing place to their respective emplacements is \$2,500.00. This includes placing the guns on the loading platforms of their respective emplacements, and the mortars as near as they can be conveniently placed to the pits; but does not

-----2-----

include mounting guns or mortars.

By Department letter of December 8th, 1897, (16485/76), \$1,700.00 was allotted for preparing to receive all gun and mortar carriages and for receiving one shipment (two 10-in. gun carriages or the equivalent). \$3,300.00 was the estimated cost of receiving all the carriages (letters of Lieut. Col. W. H. Benyaurd, Corps of Engineers, dated November 11, and December 2, 1897).

I would request that the balance of this estimate, viz., \$1,600.00 and the \$2,500.00 estimated above for guns and mortars, a total of \$4,100.00 be allotted for the purpose of transferring the guns and mortars and all the carriages except the first shipment, from the breakwater Fort Taylor to the emplacements.

Very respectfully,

Your obedient servant,



1st. Lieut., Corps of Engineers, U. S. A.

OFFICE CHIEF OF ENGINEERS

164853
104
WAR DEPARTMENT

Key West, Fla.,
Jul 28, 1908

Mr. McKinstry,
Lieut. E. M.

Rept. that Capt. A. J. Kimball,
Deputy S. M. S., was entered
into contract for shipment
from Sandy Hook of the
six guns intended
for Gun Battery at this
post. The guns are to
be delivered on a scow in
the harbor. As to furnish
the scow, have it towed to
treasurer, Fort Taylor,
and unload guns.

Reg. acct. of \$4,100.00
for purpose indicated.

\$4,100 allotted and Lieut. McKinstry
has advised Manila, 1908.

K

John A. ...