

Fort Trumbull, New London, CT Constructed between 1839-1852

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1794 Block House

- The following is a detailed assessment of the stones used to build the block house.
- Stone blocks were evaluated for type of finish, color and texture. This was done because variations were observed during the site visit.
- Stone blocks were measured for thickness (via photograph) from the bottom (1st) layer up to the top layer as variations were visible.
- The interpretative sign mentioned a cellar indicating another level of stone blocks below ground. Without access to the cellar/foundation it was not included in this study.
- The variations suggested the block house was built in stages. The 1843 and 1848 *Report of the Chief Engineer* state repair work was done on the block house. This is consistent with the changes in stones at different levels.
- What exists today is an upgraded, modified version of the original 1794 block house.

Stone Quarrying on the Fort Site

The stone to build the block house may have been quarried on site. This is indicated by the fact the fort or at a least portion of it was built from stone quarried on site as noted in the 1843 *Report of the Chief Engineer*.

“Fort Trumbull, New London, Connecticut.- Operations during the past year have been confined chiefly to completing the scarps of the four bastions, and of four of the five curtains—the whole scarp being now up, except the east curtain, and a small part of the north; grading the esplanade of the northeast and east fronts; removing part of the old work, and quarrying granite. Of the work executed, the principal items are: 3,125 cubic yards of stone masonry in mortar; 170 cubic yards of brick masonry; 4,714 square feet of stone cutting; 5,686 cubic yards of earth removed; 362 square yards of sodding; and 206 cubic yards of rock quarried.”
(underline author’s emphasis)

“Rock quarried” and “quarrying granite” refers to quarrying rough stone blocks from the bedrock. “Stone cutting” refers to rough stone blocks being cut to specific sizes as needed.

Phase 1 – Bottom Half of Building (1794)

The bottom half of the block house is a little higher than the actual halfway mark. It is almost at the 2/3's height mark. In figure 1 the top of the current entrance is at the same level as the top of the bottom half and marks the original height of the block house. At that point there is a change in the type of stone indicating the upper section is an addition.



Figure 1 – West side of block house with entrance. The top layer of the original 1794 block house is indicated by the arrow. It has the same height as the entrance.

Stone Blocks:

Starting at ground level the first layer of stones only partially shows due to a build up of soil around the base (see figure 1). Layer 2 is the first full layer to show completely above ground. It contained the thickest stone blocks. Layers 3, 4 & 5 contain blocks approximately the same thickness which are slightly less thick than the blocks in layer 2. Layers 6 & 7 contain blocks approximately the same thickness that are slightly less thick than the layers below them. Layer 8 contains blocks that are slightly less thick than the layers below them. Layers 9 & 10 contain blocks approximately the same thickness and are the thinnest blocks at half the thickness of the blocks in layer 2. The stone blocks in the bottom half decrease in thickness as they progress up

the wall, the thinnest being at the top. There is a clear visual progression with the variation in the thickness.

Variable lengths: long, medium and short.

Uniform color and texture of pinkish-tan, same type of stone (bottom half of figure 3)

Uniform stone finish with a flat semi-smooth face

Rifle – Gun Ports:

Small rectangular openings between layers 5 & 6, evenly spaced out across whole width of building. Total of 15 in the south wall. (Figure 2)



Figure 2 – South side of block house with fifteen gun ports and a vent hole in the upper right below the stone eave of the roof (indicated by the arrow).



Figure 3 – Close-up of south wall. Note the uniform color (pinkish-tan) and surface texture (semi-smooth) of the stones in the lower half of photo (arrows). It is different from the blue-gray color and rough surface texture of the stones in the layers above it.

Phase 2 – 2nd Level of Stones (1843)

Layers 11, 12, 13, 14 & 15 contain a different type of stone than the bottom half. The stone has a rough uneven finish. Layers 11 & 12 have slightly thicker stone blocks than layers 13, 14 & 15. Stone lengths vary from long to medium. Many of the stones have a blue-gray color that is darker than the stones in the bottom half. (Figure 2 & 3) The surface treatment of the blocks is rough unlike the better quality finish of the original stonework in the bottom half.

Compare stones in lower half with stones in upper half. There is a marked difference in the finish. In figure 4 the bottom row shows a layer of stones from the bottom half with a semi-smooth flat face whereas the upper rows have a rough uneven finish.

These five layers indicate an addition was built on top of the original 1794 bottom half of the building. The height of the building was raised. The 1843 engineer's report stated "The block-house has been repaired and made bombproof". What constituted making the building "bombproof"?



Figure 4 – The bottom layer in this photo is the semi-smooth pinkish-tan color of the original 1794 block house stonework. The rough stones in the three layers above of it are part of 2nd phase which involved repairs and additions made to the building.

Phase 3 – 3rd Level of Stones (1848)

The thickness of the four upper layers appears to be similar to the layers in phase 2. Due to perspective in photos it could not be measured accurately. The stone in this final upper section is a mix of the rough faced blocks used in phase 2 and blocks with a better quality very smooth finish the same as used in the fort and roof eaves above. It appears odds and ends of stone blocks were used to make “the repairs of the block house are done” in 1848 as noted in the engineer’s report.

More stone blocks in this upper section have quarry marks than in the middle section of phase 2. This is unusual because quarry marks were considered unsightly and generally erased on the exposed side of the stones. That said, the holes are dateable. The blocks have drill holes evenly spaced out 6-7 inches part along the whole length of the block. This is the commercial plug and feather method which came into wide spread use in New England in/after 1820.

Discussion

The bottom half has consistency with the type of stone and its thickness progression from thick at the bottom to thin at the top. The upper half does not: it has two different sections that combined are less than the height of the bottom section. The middle section has stone with a rough finish (intentional). The upper section has a mix of stones with a very smooth finish mixed with stones with a rough finish indicating a different work period. The two upper additions (2nd & 3rd levels) appear to have raised the building’s height to a full two stories. A cursory look inside showed a high dome ceiling. If I recall the dome is higher than the original wall height. Does the domed ceiling account for the raised height of the building? Did the dome have anything to do with bomb proofing the building?

Major Alterations

Roof Eaves (1843 or 1848)

The eaves of the roof are constructed of high quality well finished stone slabs which are similar to the stonework used in the current Fort Trumbull (1839-1852). Commercial plug and feather method drill holes are present on at least one of the slabs. That dates the roof to post 1820 and is consistent with the 1843 and 1848 repairs and bomb proofing of the building. (Figure 5)



Figure 5 – The roof eave stone on the east side of the block house has the same color and smooth finish of the stones in Fort Trumbull. Remnants of drill holes from the commercial plug and feather method of splitting the stone are visible and indicated by arrows. This phase of repairs and renovations dates from the 1840s.

West Side: Entrance & Windows (Figure 1)

Compare the stone finishes in figure 6. This photo shows stones from three different periods.

- Bottom left corner stone is completely smooth with a high quality finish
- Top left corner stone has a rough uneven finish
- Center (right) of the smooth, finished stone is the semi-smooth stone (phase 1)
- Bottom right corner stone framing window has a different texture than semi-smooth stone above it. It has a flat face but does not exhibit a smooth finish.



Figure 6 – Close-up of the stonework on the west side. The stonework of the entrance is in the lower left of the photo.

Door Frame

The door is framed by unusually wide stone panels. Its architecture is identical to that used in the entrances of other Fort Trumbull buildings called the Egyptian Revival Style. The stone panels used to frame the door have a high quality smooth finish. In total there are four matching pieces of stone. The light tan frame presents a stark plainness with its massive panels making it stand out against the small darker, rougher finished stone blocks used to construct the building. Contrasts in stone and style. There is no doubt the door frame is much later than 1794.

Window Frames (Figure 1 & 7)

The two small square windows flanking the entrance proved to be an interesting study. They are framed with stone blocks similar in texture, finish and color to the stones in the wall. Their stone frames were made to blend in with the existing stones. A closer look shows the horizontal top and bottom bars were fitted that is they have an extended narrow edge on the window side. The narrow edge fits between the two vertical side bars like a puzzle piece. Small finish details like this were found in the masonry work at Fort Warren 1833 -1861 in Massachusetts. It seems to be a common aspect during this time period. Yet it is in contrast to the stark plainness of the door frame. A completely different style.

In addition, these windows have an unusual feature. Note the crescent shape of cement on each side of the vertical bars. The wall stones abutting are curved (concave) forming to the crescent shaped cement. That shows there were originally two circular windows flanking the door. The west side windows shape matches the large circular opening in the north wall indicating it was originally a window. During the building of the fort that included repairs to the block house, the old circular windows were replaced by the small square windows.



Figure 7 – This photos show details of the window on the right side of the entrance. The arrow points to crescent shape cut to accommodate the original round windows. There is a matching crescent shape on the left side of the window.

North Wall: Large Circular Opening Feature (Figure 9)

The circle's diameter is the height of 3½ stone layers. It starts at the bottom of layer 6 with the top part of the rifle ports and goes up to layer 9. What was the large circular opening's purpose? There is no evidence it was a gun port for a canon. At Fort Warren on George's Island in Massachusetts canon gun ports had slotted openings with an hour glass type shape flared out on interior, narrow opening and flared out on the exterior of the wall. The circular opening was on the north bay (water) side of the building. Its circular shape is similar to a porthole in the side of a ship. Was the large opening used for viewing the water for enemy ships as a lookout feature?

At an unknown date the circle was filled in with stone along with the rifle ports (on the north wall) that were filled in with cement. The filler stone has a rough finish similar but not quite the same as used in phase 2. It is also a little darker blue-gray than used in phase 2. Stones are tightly fitted, closer than in the any of the three phases used to build the wall. Gaps between the stones are very narrow to the point there is almost no gap which includes the outer ring. This is the work of a master mason who tightly fit the stones into the circular opening tightly sealing it up. The filler stones were chosen to match the stones in middle section of the wall suggesting it was done during one of the to repair dates (1843 or 1848).

The rifle ports in the stone layer at the base of the circular opening were completely filled in with cement. This sealed the bottom half of north side blocking out light and moisture.

Why were the features closed up? Was it done to create a small dry room inside the block house? That is easily verified by going inside. If so, for what purpose?



Figure 8 – Overall view of north wall. Arrow indicates vent near top of roof under the stone eave.

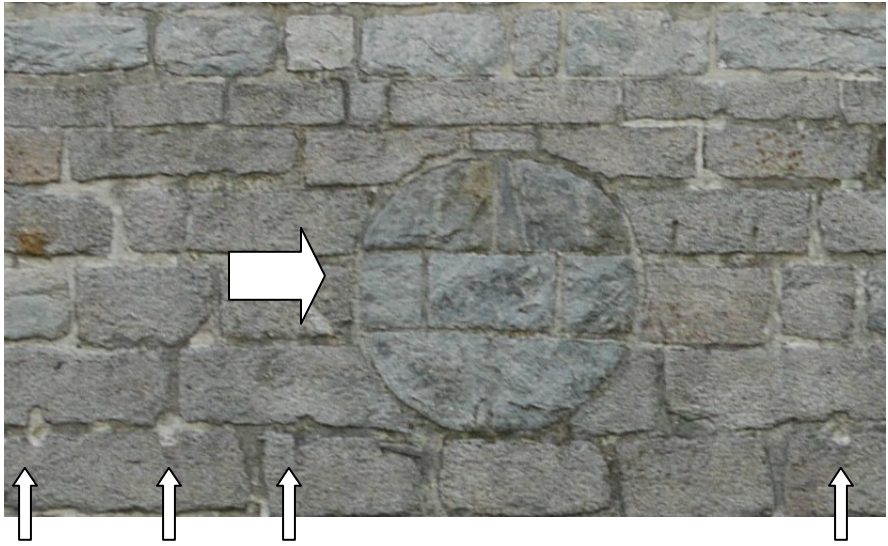


Figure 9 – Large arrow indicates filled in circular window in north wall. Small arrows indicate filled in gun ports.

An illustration of the block house was drawn for an 1868 book (figure 10). In it the south side is shown along with other nearby features. The south side faced into the fort. The west side with the entrance faced the newly erected retaining wall at the end of a tall embankment across the road from it. The east side had land raised almost up to the rifle ports where two covered canons are visible on the plateau bordered by a low stonewall. The south, west, and east sides rifle ports at that point in time appear to be obsolete yet they were kept open. Only the north side's rifle ports were filled with cement. The north side was the only side vulnerable to a waterside attack and yet its rifle ports were sealed shut.

Is there any information in the data archive about the circular opening? Or the closing of the rifle ports and circular opening?

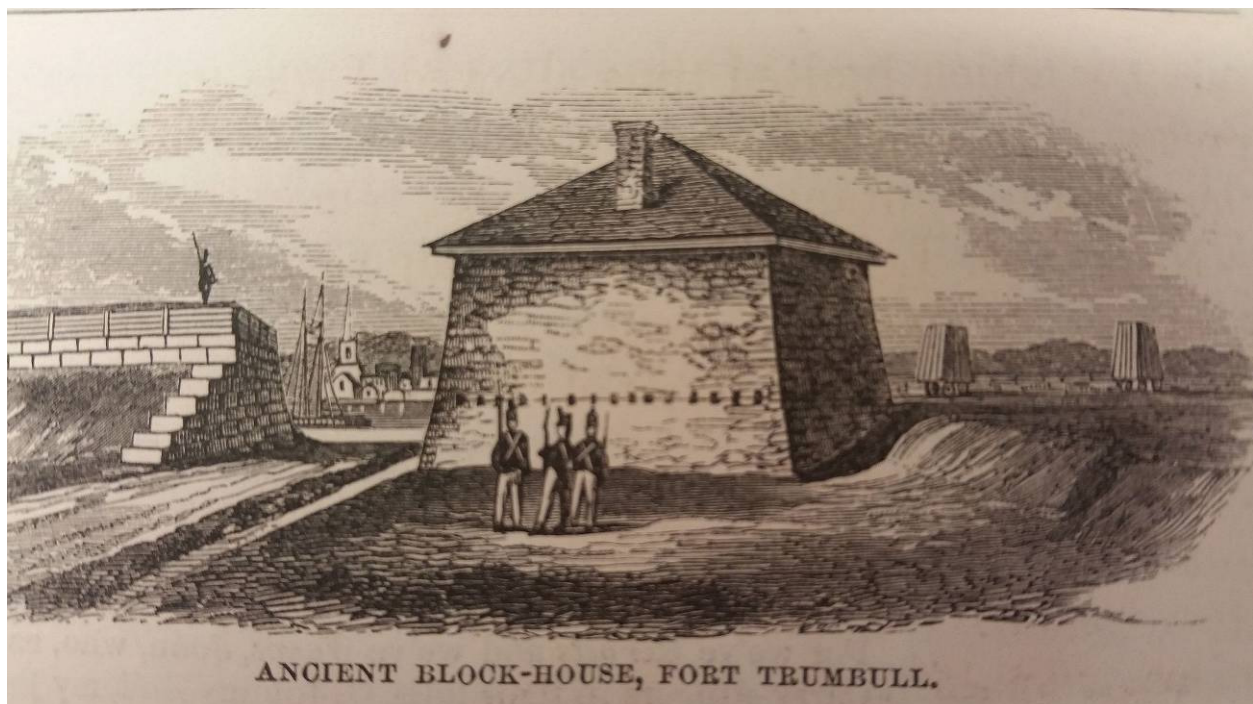


Figure 10 – 1868 illustration of the block house.

Source: Lossing, Benson (1868). *The Pictorial Field-Book of the War of 1812*. Harper & Brothers, p. 697.

North & South Wall: Small Square Openings (Ventilation?)

A single small square opening is in the top corner under the roof eave in north and south walls. (see figures 2 & 8) West and east side walls do not have the small opening. The openings appears to be for ventilation. The opening is shown in circa 1907-1915 postcard (figure 11). The current ventilator at the peak of the roof is not shown. It dates from later in the 20th century.

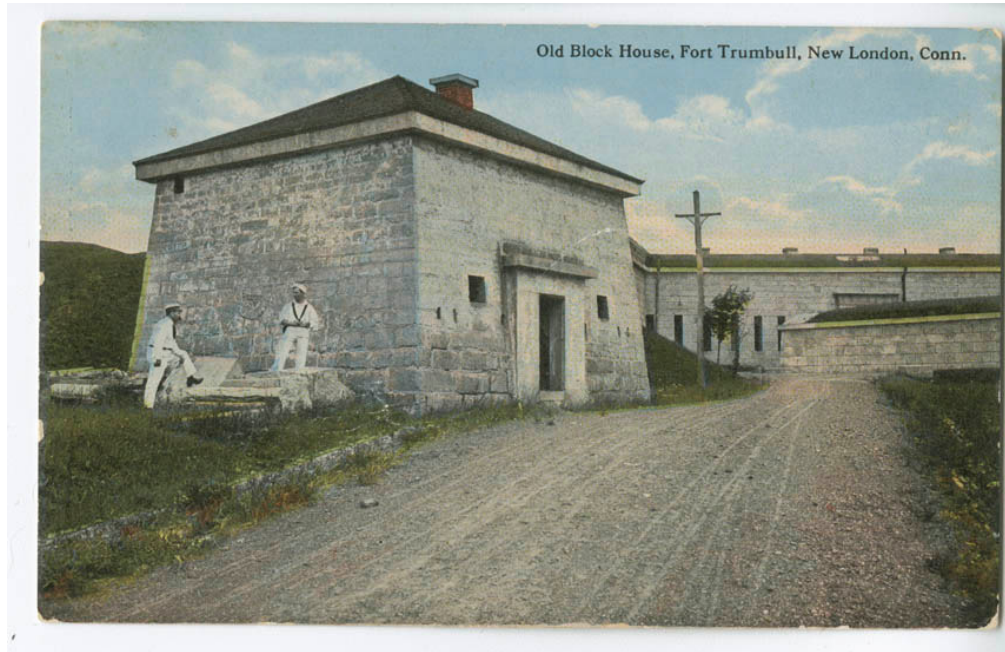


Figure 11 – Circa 1907-1915 postcard view.



Figure 12 – Circa 1907-1915 postcard view.



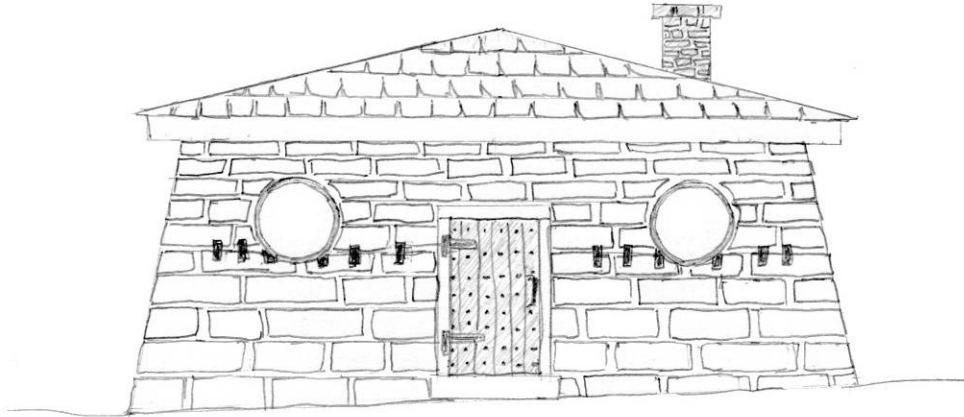
Figure 13 - 1813 watercolor of Fort Trumbull (2nd generation fortification) by an unknown artist. The roof and chimney of the block house are just visible (arrow). New London Maritime Society – Howard Family Collection. Used with permission.

Conclusion

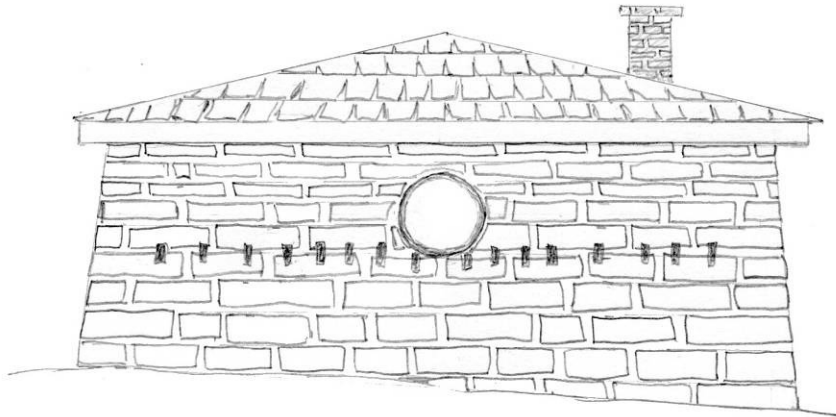
The original 1794 Block House had stone construction. This is confirmed by the engineer's 1843 & 1848 reports in which he stated making repairs to the block house. He did not state he rebuilt it. The reports are cross-checked with the archaeology in which three different wall building levels were identified. In addition, there is the Egyptian Revival Style entrance, the closed up circular opening in the north wall and the reconfigured windows flanking the entrance.

The height of the original Block House is calculated by the 1st building phase. It is at the top of the bottom half which is currently at the top of the current entrance. The west side had two circular windows flanking a common width wooden door. The north wall had a circular window. Rifle ports were placed around the entire building. The roof configuration may have been the same as is in place currently. The chimney in the block house is shown in an 1813 watercolor of the fort by an unknown artist. The tapered-in configuration of the building is original. It was continued as the building's height was later raised.

Original Block House 1794



West Side Wall



North Side Wall

Circular windows on west and north sides were the same size.
It is unknown whether the windows had cross bars or other features.
Drawn to scale based upon photographs.

Appendix – Engineer Reports

Report of the Chief Engineer [November 2, 1843], Public Documents ... v.1, Washington DC: Gales and Seaton, 1844.

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Fort Trumbull, New London, Connecticut.- Operations during the past year have been confined chiefly to completing the scarps of the four bastions, and of four of the five curtains—the whole scarp being now up, except the east curtain, and a small part of the north; grading the esplanade of the northeast and east fronts; removing part of the old work, and quarrying granite. Of the work executed, the principal items are: 3,125 cubic yards of stone masonry in mortar; 170 cubic yards of brick masonry; 4,714 square feet of stone cutting; 5,686 cubic yards of earth removed; 362 square yards of sodding; and 206 cubic yards of rock quarried.

The exterior battery is finished, and ready to receive its armament of eleven barbette guns; parades of this battery finished, except breast-height wall and banquettes. The block-house has been repaired and made bombproof. The place of arms is entirely finished, and ready to receive its armament of six barbette guns. The gorge piers of the several bastions are complete; the piers of north and west curtains are complete, except two of the former and one of the latter; all but one of the casemate arches of the western curtain have been turned.

The unexpended balance will be applied chiefly to casemate piers and arches of the main work.

Balance in the Treasury on the 30th September, 1843 -	\$36,900 00
To be drawn from the Treasury in the 4th quarter of 1843 -	10,000 00
To be drawn from the Treasury in the 1st and 2d quarters of 1844 -	21,000 00
Estimate of the amount required to be appropriated for the half year ending December 31, 1844 -	20,000 00
Estimate of the amount required to be appropriated for the half year ending June 30, 1845 -	20,000 00

Report of the Chief Engineer [18th November 1848], United States House of Representatives, Ex. Doc. No. 1 (House Documents v.47), Washington, DC: Government Printing Office, 1848.

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Fort Trumbull, New London, Connecticut. During the present season, operations have been confined chiefly to completing the northern exterior battery and its parade; finishing the repairs of the block house therein; asphaltting casemate roofs; completing the paving of the gun rooms; advancing considerably the interior finish of the casemate quarters; completing the pointing of all the stone masonry; finishing the breast-height wall of the north curtain and the remaining chimney tops of the north and west fronts; completing all the terrepleins, banquettes and earthen parapets, and sodding their slopes, and advancing many of the minor details of the work, &c., &c.

The amount of work executed during the year is 203 cubic yards of stone masonry in mortar; 633 cubic yards of dry stone masonry; 133 cubic yards of brick masonry; 229 cubic yards of concrete masonry; 50 superficial feet of stone cutting; 6,024 cubic yards of earth removed; 3,718 square yards of sodding; 184 cubic yards of rock quarried; 1,180 square yards of asphalt covering; 568 days of carpentry finishing quarters and making and repairing tools and machinery; and 1204 days of smithery in making and sharpening tools, &c., &c.

Below is exhibited the condition of the work at the present time, viz:

The north exterior battery and its parades are finished; the repairs of the block house are done; the place of arms, and the ditch separating it from the main work, including the palisades closing the end of the latter, are completed; the scarps of the fort are at their full height, and coped; all the masonry of the casemates is finished, and the roofs of all are covered with asphalt; the gateway is built, and the gates have been partly prepared; the magazines are all finished; the bakery is completed; the casemate traverse circles are all said, and the gun room floors paved; the cis. tern arch is turned, and the well deepened; the parade wall, including the two staircase towers of communication to the upper batteries is finished; most of the permanent drains are constructed; all the stone parapets, breast-height walls, and chimney tops, have been laid; all the pintle centres and traverse circles of the barbette batteries are completed; the furnace for heating shot is finished; the terrepleins, banquettes, and earthen parapets have been embanked, and their slopes sodded; the carpentry of the officers' and soldiers' quarters is much advanced; the grading of the esplanades of the seaward fronts is finished, and sea-walls have been erected to protect them from storms; the pointing of the brick work is about one-third, and that of the stone masonry entirely completed; and many minor details are about being executed.

The officer in charge asks, for the completion of the work, and a purchase of additional ground, the remainder of the original estimate, viz: \$43,000; but this department is constrained to introduce a much smaller sum in the official estimates.

Balance in the treasury on the 30th September, 1848..	\$10,000 00
Probable amount to be expended by 30th June, 1849..	10,000 00
Estimate of amount required to be appropriated for fiscal year ending 30th June, 1850.....	10,000 00