

HARBOR AT CAPE PORPOISE.

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

*A report of the survey of the harbor at Cape Porpoise, in Maine.*

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DECEMBER 15, 1845.

Read, and referred to the Committee on Commerce.

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WAR DEPARTMENT, *December 9, 1845.*

SIR: In compliance with the resolution of the House of Representatives of the 7th of June, 1844, requiring the Secretary of War "to procure and report to the House, at the next session of Congress, a survey of the harbor at Cape Porpoise, in the State of Maine," I have to state that Mr. Secretary Wilkins reported, during the then next session, that the want of appropriation applicable to such objects had delayed the survey required.

I now respectfully transmit herewith a report of the chief of the Corps of Topographical Engineers, accompanied with all the information believed to be required by the resolution.

Very respectfully, your obedient servant,

W. L. MARCY,  
*Secretary of War.*

Hon. J. W. DAVIS,  
*Speaker of the House of Representatives.*

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BUREAU OF TOPOGRAPHICAL ENGINEERS,  
*Washington, December 8, 1845.*

SIR: I have the honor of transmitting herewith a copy of the report of Captain W. H. Swift, corps of topographical engineers, upon the condition of the harbor at Cape Porpoise, Maine, with a plan and estimate for its improvement, directed by a resolution of the House of Representatives of the 7th June, 1844.

Respectfully, sir, your obedient servant,

J. J. ABERT,  
*Col. Corps Top. Eng.*

Hon. W. L. MARCY,  
*Secretary of War.*

WASHINGTON, October 2, 1845.

SIR: I have the honor to state that in obedience to your instructions of the 6th ult., to proceed to Cape Porpoise harbor, Maine, and there to examine the site of the pier proposed to be built at that place for the protection of vessels engaged in the coasting trade, I have performed the duty assigned to me, and have now to report the result of my examination.

No appropriation for a survey of this harbor having been made by Congress to carry out the resolution of the House of Representatives of the 7th June, 1844, directing the Secretary of War "to procure and report to this House, at the next session of Congress, a survey of the harbor of Cape Porpoise, in the State of Maine," I was instructed by you to call upon the Hon. Mr. Herrick, late the member of the House of Representatives for that district, for such information in reference to the proposed improvement as he might have it in his power to impart.

By the accompanying extract from a communication of Mr. Herrick, and by the aid of the sketch furnished by Mr. Herrick, the object to be secured will be readily understood. The personal examination which I made of the site of the proposed pier, and of the neighboring stone quarries, will enable me to present a plan and an estimate of the probable cost of constructing the work, which it was the object of the resolution to bring to the notice of Congress.

The harbor of Cape Porpoise lies on the eastern part of the township of Kennebunkport, and about three miles east of Kennebunk river, about midway between Portsmouth and Portland, the only harbor in fact between these two points, and consequently much resorted to by vessels engaged in the coasting trade between Boston and all the ports east of Kennebunk, embracing nearly the whole coast of Maine, the provinces of New Brunswick, Nova Scotia, &c. &c.

This harbor is formed by a cluster of small islands, and the principal entrance lies between Goat island on the east, on which there is a lighthouse, and Holly island on the west; the width of the channel between them is about 90 yards, and about 6 fathoms in depth at low water. After passing the islands, the channel increases to about 100 yards in width, and at the distance of one eighth of a mile the depth diminishes to 3 fathoms—which width and depth continue without any sensible variation for the distance of about one quarter of a mile; thence it diminishes to 50 or 60 yards in width, and to 16 feet in depth; thence it is gradually reduced both in width and depth to the head of the bay or harbor at Town's wharf, a total distance from the islands at the entrance of about four-fifths of a mile.

From the preceding description, it will be seen that the capacity of the harbor is not great. It has ample depth of water for the class of vessels which is most in use in navigating this part of the coast—vessels of from 60 to 200 tons, and drawing say 7 to 12 feet; but it does not possess sufficient width. It is so much resorted to as a harbor of refuge in storms, that it is not unusual for 60 or 80 vessels, and sometimes 100, to seek shelter in it at the same time; and it is at such times that the difficulties which are apt to be remedied are experienced. The channel way being narrow, the vessels are obliged to anchor so near each other, that the swell of the sea produces constant dangers from collision with each other—a result which is perfectly evident.

To obviate this difficulty, it is proposed by the inhabitants and others,

whose interests are connected with the coasting trade, to build a substantial stone pier on the east side of the channel, of sufficient extent to enable the vessels to be secured to the same as they would be at a wharf, lying in tiers, if necessary, and fastened to each other.

It is proposed also to make this pier subserve another object of some importance, to wit: to close by its means the passage between two islands lying on the east side of the channel, the effect of which would be to shut out the swell produced by a gale from the east or northeast, and thus afford a good lee under which the vessels could either ride in safety, or, if moored to the pier, they would lie quietly.

The accompanying sketch will indicate the position selected for the proposed pier, to wit: from the western point of Goat island, or Savinbush island, to the extremity of an old pier, extending from Milk island, and formerly used for mooring vessels to. The exact length between the points named is 852 feet, and the depth at low water is from two to three feet. The ordinary rise of the tide in the harbor is 9 feet; spring tides rise 12 feet, and when increased by winds from the southeast, they rise to 14 feet; this will enable me to specify a minimum height for the proposed pier, say 20 feet.

From the immediate neighborhood, say at a distance of one mile from the proposed pier, excellent stone can be procured from a small island in abundance. This stone is laminated, and can be split into pieces of 6, 8, and 10 feet in length, and from 12 to 15 and 18 inches square, with great facility; and by means of a timber railway of 100 or 200 feet in length, they could be placed upon the deck of a stone boat, and transferred at once to the site of the pier. The boats being provided with a crane, and being flat bottomed, the stone could be taken from the deck, and placed in the pier with one handling: this for the *face* stone; for the filling, rubble stone can be had in any quantity from island, being within half a mile of the pier.

#### *Plan of the proposed pier.*

If the entire space between the western point of Goat island (or Savinbush island, as it is designated by some) and the old pier heretofore referred to, be closed, the length of the proposed pier will be 852 feet; the depth at low water will be from two to three feet; and as it is considered desirable to have the pier elevated at least three feet above high water mark, assuming the rise at spring tides to be 14 feet, we should have for the height of the work 20 feet, and this should be considered a minimum; for although in ordinary tides, say 9 or 10 feet, it could leave 7 or 8 feet of pier above the surface of the water, yet it is to be borne in mind that a spring tide, combined with heavy winds from the southeast, will sometimes cause a rise of more than 14 feet, and it is desirable that not less than three feet of the pier should ever be exposed.

To insure the desired stability in the work, the base of the pier should be at least equal to its height, say 20 feet; and that the mass of stone may not be unnecessarily large, the top of the pier should be half the base, say 10 feet, and this would afford a batten or slope of one-quarter at each face, say 3 inches to the foot.

An excellent stone of a suitable quality for the work is to be found in the immediate vicinity of the site of the proposed pier; it is considered bet-

ter to form the entire structure of stone, rather than to combine wood and stone together. The work can be constructed as cheaply of stone entirely, as it can be of the two materials combined, if timber be used of a superior quality, and workmanship of the best kind be introduced; and this, both in respect to materials and carpenter's work, should be the case. Another reason why timber should be excluded is, that the structure may be secured against the ravages of the worm.

To lay the face stone with a regular slope or batten, would require much additional labor in the preparation of the material; each face stone would necessarily require to be dressed with a stone axe to a uniform slope, that is to say, after the splitting should be effected, a second operation of the kind referred to would be requisite. To avoid this second process, it will only be necessary to have the several courses of stone cut equal, but each course only of uniform width throughout. Suppose the courses to be one foot thick, the batten in that case is to be effected by throwing each course back, commencing with the second, 3 inches, thus:



In order that the rough edges of the stone may not chafe the sides of vessels lying at the pier, it will be necessary to place fender piles along the face, at about 20 feet from each other, with the foot in the mud, extending to the top of the stone work, and secured to the face by iron straps laid between the courses and encircling the piles.

The plan proposed for laying up the stone work would be this: the headers and stretchers which compose the face work should be split out in pieces of *not less than 5 feet* in length for the headers, and *not less than 8 feet* for the stretchers. The stretchers should be long, that there may be no more joints than necessary, and the headers should penetrate the mass of rubble stone, which is to form the interior of the work, at least 4 feet; 5 or even 6 would be better, but it may be difficult to procure so many long stones as would be required for both headers and stretchers. The stone should be got out *not less than 12 inches* thick, and from that to 18 inches, but each course should have stone of uniform thickness: 18 inches would be better than 12, but probably it would be more difficult to get them.

If the bottom upon which the pier is to be built is not level, or nearly level, the inequality should be filled under the first course with *flat* stone, in footing upon which the first or outer course of split stone is to be laid, alternately header and stretcher. The first course being laid, and the stone at the angles being secured together by cramps two feet long of  $1\frac{1}{2}$  inch iron, penetrating the stone 4 inches, and the space between the holes being channelled in order that the top of the cramp may be flush with the top of the stone, the entire interior between the face stone thus laid should be filled with rubble stone of all sizes, tolerably well placed together; that portion in contact with the backs of the face stone, both headers and stretchers, should be laid with care, in order that they may be of the same height as the face stone for the reception of the second course, and also that they should be of a suitable shape to bed properly. This done, the second course should be

laid, receding from the first course 3 inches, in the manner heretofore explained, and so laid also, that the headers of the second course shall rest upon the middle of the stretchers of the first course, and thus break joints, as it is called; the interior space to be filled with rubble as before stated, the angles secured by cramps, and so on to the 12th course inclusive. The remaining eight courses should be laid with extra care, and cramps should be introduced not only at the angles, but at every joint between header and stretcher. The work would be stronger and better if cramps were used at every joint, not only in the upper courses, but in the lower courses also; and were it not for the cost, these cramps should be of *copper*. With the desire of avoiding all expense that may not be essential, iron for cramps is recommended, and the weight of the eight upper or superior courses is relied upon to keep in place the lower courses, without resorting to cramps for all the courses. In the last or upper course the headers should be 10 feet long and run across the pier entirely, and be secured to the next lower course by dowels, and to the contiguous stretchers by cramps like the others.

*Estimate of the cost of the proposed pier.*

1,917 cubic yards split granite, not less than 12 inches square, \$3 per yard laid	-	-	\$5,751 00
7,414 cubic yards rubble stone for filling, at \$1 75 laid	-	-	12,974 50
27,648 pounds 1½ inch round iron for cramps, at 8 cents	-	-	2,211 84
424 pounds do. do for dowels, at 8 cents	-	-	33 92
Drilling 6,912 holes for cramps, at 4 cents each	-	-	276 48
Do. 424 holes for dowels, at 4 cents each	-	-	16 96
Flat stone for footing, say	-	-	300 00
40 fender piles 25 feet long, with iron straps, at \$5 each	-	-	200 00
20 round stone mooring posts, at \$10 each	-	-	200 00
			<hr/>
			21,964 70
Superintendence and contingencies, 10 per cent.	-	-	2,196 47
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Total	-	-	\$24,161 17

I have the honor to be, sir, your obedient servant,

W. H. SWIFT,  
Captain Topogl. Engs.

Col. J. J. ABERT, Chief Top. Engineer.

*Extract from a letter from the Hon. Joshua Herrick, late member of Congress from the district in which the harbor of Cape Porpoise lies.*

"Agreeably to your suggestion, I have made an examination and partial survey of the harbor at Cape Porpoise, Maine. The course of the main or ship channel from the ocean into said harbor is N. 33° W., between Goat island (on which there is a light house) on the right, and Holly island on the left. The general course of the channel from thence to the head of the harbor or Town's wharf, is N. 15° W. two hundred and fifty rods.

