EXHIBITS.

EXHIBIT No. 1.

The Provincial Secretary to Mr. Sproat.

PROVINCIAL SECRETARY'S OFFICE,
23rd June, 1874.

SIR,—The following telegram was, yesterday, dispatched to you:—

"Kinmorris can come immediately; five hundred, if subject to agreement here for future. Order cement, payable nine months after delivery to Hudson's Bay, London."

In explanation of the above, I have to acquaint you that the Government is prepared to pay to Messrs. Kinipple & Morris five hundred guineas in consideration of one of the firm visiting Esquimalt immediately, for the purpose of making the preliminary surveys, examining the site, collecting particulars as to the best building materials to be employed, and other necessary information, and travelling expenses there and back. The future employment and emolument of said Engineer to form the subject, after his arrival in Victoria, of an agreement between the Government and the said firm.

With reference to the cement: I have to authorize you to purchase and ship the same, packed in oak casks and duly insured, per Hudson's Bay Co.'s ship, every precaution being taken to have it carefully inspected by the Engineer before shipment. Payment to be made nine months after delivery to the Hudson Bay Co., London. I have, &c.,

(Signed) JOHN ASH,
Provincial Secretary.

EXHIBIT No. 2.

Mr. Sproat to the Provincial Secretary.

LONDON, 4 LIME STREET SQUARE, E.C.,
January 2nd, 1874.

SIR,—Having the opportunity of conversing yesterday with Knipple & Morris, I asked some questions based on the assumption in my own mind that the Government would and could build no more during 1874 than the sea-wall of the Dock, thus leaving another year in which to decide the actual size and kind of Dock to be constructed.

After mature consideration, the two partners agree that the walls on each side of the Dock entrance should be constructed of concrete faced with ashlar.

The sea-wall would be a big affair, probably 20 feet thick at base. It might take fully six months to build it after everything was ready.

The concrete should be made of Portland cement, which must be got in England, and be subject there to strict weights and tests prescribed by the engineer. I suggested again that we might find a substitute for the cement in the Province, but this would not do. The cement is a vital point, and engineers will not apparently recommend anything that has passed tests in small quantities unless it has been again and again proved suitable when extensively used.

Suppose, then, that this letter reaches 10th of February, and that by the end of February the Government appoints by telegram or directs steps to be taken for the selection of an engineer here, his movements, whether he be Mr. Morris or any other, will be much as sketched in any separate letter of this date.

If at the same time the cement is ordered by telegram, the engineer before leaving England could examine the contracts for it. The cement *might* then be shipped by the beginning of May, though if the demand is as in 1873 this will not be possible. It might be October, 1874, before the cement would be at Esquimalt.

The engineer would have arrived in Vancouver in middle of April. During May he would have settled matters, so that contracts could be given out for some preliminary work before the expected arrival of the cement (getting stuff for the concrete, facing stone, etc.)

The idea would be not to have a long temporary cofferdam; but to dredge the bottom and lower down the blocks of concrete, sending a diver down occasionally and thus build the walls; and afterwards have a short temporary cofferdam in front of the entrance.

Ordinarily a contractor, if he took the whole job for the walls, would get his own cement from England, but as no one on the spot may do this, and arranging that it might take time, and throw the beginning of the sea-wall into 1875, Mr. Morris suggests that a contractor should agree to take the cement which the Government may have ordered, and he thinks a contractor would gladly do this as the Government could import the cement more cheaply than a contractor could, and it would have passed Mr. Kinipple's inspection here on behalf of the Government's engineers.

Somebody must find the following for the sea-wall work:
Mill for grinding lime and cement; require 8 to 10 horse-power engine.
Travelling crane for the blocks of concrete, etc.; (probably steam) depends on size of blocks.
A house or means of dry storage (important for the cement.)
Pile-driver, (steam?); piles only to be used in temporary work. Barges, dredge.
The permanent engines and pumping machinery would not be wanted till far on into 1875. It seems that the most vigorous action will not finish the sea-wall till about April, 1875, if then.
Messrs. Kinipple & Morris in giving information quite understand that it is freely given on their part without counter-obligation on the part of the Government. I have conversed more with them than others, merely because they seem to have their ideas well in hand, and have succeeded in recommending themselves to Col. Grant, of Quebec, who represents that city in some dock business.

I have, etc.,
(Signed) GILBERT MALCOLM SPROAT.

EXHIBIT No. 3.

Report of Messrs. Kinipple & Morris on proposed Graving Dock.

[Printed in full, page 751, Sessional Papers, 1876.]

EXHIBIT No. 4.

Mr. Sproat to the Provincial Secretary.

LONDON, 4 LIME STREET SQUARE, E.C.,
July 29th, 1874.

SIR,—I herewith send the original letter of the Admiralty, 28th July, and their original sketch of a midship section of the "Nelson" and "Northampton" class of ships in the Royal Navy.
The dimensions are to be as stated in my letter No. 148, but you will notice that they have not yet settled the *depth*.
They are now considering what the *depth* must be.
As regards *width*, you will observe that this has to be 65 feet, at least, at entrance. Should a caisson, however, be decided on, the width of the entrance at the coping should be adequately increased in consequence of the sloping sides.
The Admiralty will be glad to have details of construction at as early a date as convenient, for consideration and approval.
I have kept here a copy of the Admiralty letter, and the midship section. I am, &c.,

(Signed) GILBERT MALCOLM SPROAT.

ENCLOSURE.

Col. Pasley to Mr. Sproat.

ADMIRALTY, 28th July, 1874.

SIR,—I am commanded by the Lords Commissioners of the Admiralty to acknowledge the receipt of your letter of the 2nd instant, on the subject of the construction of the proposed Dock at Esquimalt, in which you request to be advised of the requirements of the Crown; and, in reply, I am to transmit to you a midship section of the "Nelson" and "Northampton" class of ships in the Royal Navy, as a guide in designing the work.
I am further to inform you of the requisite dimensions to which the Dock should be constructed, which are as follows, viz.:—

	Feet.
Length at coping	400
,, on floor	370
Width at coping	90
,, on floor	45
,, at entrance	65 *at least.*

Should a caisson, however, be decided on, the width of the entrance at the coping should be adequately increased in consequence of the sloping sides.
My Lords will be glad to be favoured with the details of construction at as early a date as convenient, for consideration and approval. I am, &c.,

(Signed) C. PASLEY.

EXHIBIT No. 5.

The Resident Engineer to the Chief Commissioner of Lands and Works.

ENGINEER'S OFFICE, ESQUIMALT,
12th November, 1881.

SIR,—I have the honour to inform you that up to the 1st of this month about 340 tons of cement have been used in Dock construction, and that there was on hand at the same date about the same quantity.

I estimate at least 4,400 tons will be required in all to complete the Dock, and beg respectfully to suggest that arrangements for the supply of this quantity be made as soon as convenient.

I have, &c.,
(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 6.

The Resident Engineer to the Chief Commissioner of Lands and Works.

ENGINEER'S OFFICE, ESQUIMALT,
8th October, 1881.

SIR,—Referring to my letter of the 5th instant calling your attention to the quantity of cement on hand, I respectfully suggest it would be advisable to order 100 tons through Messrs. Kinipple & Morris from England.

The cement should be of the same quality as the previous shipment, and shipped in oak casks, as soon as possible.

I have, &c.,
(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 7.

The Resident Engineer to the Chief Commissioner of Lands and Works.

ENGINEER'S OFFICE, ESQUIMALT,
18th February, 1880.

SIR,—Anticipating the early commencement of Dock construction, I have the honour to inform you I consider it advisable to order one hundred tons of the best Portland cement from England, the quality of course to be subject to the approval of the Engineers-in-Chief, Messrs. Kinipple & Morris, and the cement to be shipped in oak casks.

I have, &c.,
(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 8.

The Resident Engineer to the Chief Commissioner of Lands and Works.

ENGINEER'S OFFICE, ESQUIMALT,
2nd November, 1881.

SIR,—I have made enquiries when any ships will be leaving England for Victoria capable of bringing cement required for the Esquimalt Graving Dock, and find that the "Boldon" was to have left Liverpool in October. She may, however, not yet have started, and the information can be obtained through Welch, Rithet & Co., by cablegram.

Another ship will leave Liverpool early in December, and another in February.

The Hudson Bay Co's. ship "Lady Head" will leave London early in December, and another of their ships will start three months afterwards.

I have, &c.,
(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 9.

Telegram from Messrs. Kinipple & Morris to the Chief Commissioner of Lands and Works.

Received at Victoria, 28th December, 1881.

Total five thousand tons. Forty-nine shillings in London exclusive freight.

(Signed) KINMORRIS.

EXHIBIT No. 10.

Messrs. McNamee & Co. to the Honourable G. A. Walkem.

MONTREAL, 14th Sept., 1881.

SIR,—We beg to acknowledge your telegram of the 13th instant complaining of the rate of progress on the Graving Dock.

We regret very much the nature of your telegram, as this is the first communication in the shape of a complaint that we have received, and in the absence of same naturally concluded that there was no cause for it.

We have this day written to Messrs. Robertson, Huntington, & Nicholson, formally notifying them that if the strict terms of the contract are not adhered to in connection with our agreement with the Government, we shall immediately take such action as we may deem necessary in the premises.

We have, &c.,
(Signed) F. B. MCNAMEE & CO.

EXHIBIT No. 11.

Telegram from Mr. McNamee to the Chief Commissioner of Lands and Works.

MONTREAL, Sept. 14th, 1881.

Have written contractors to-day about rate of progress. Will write you.
(Signed) F. B. MCNAMEE.

EXHIBIT No. 11A.

The Resident Engineer to Mr. Wilson, Chairman of Dock Committee, 1881.

ENGINEER'S OFFICE,
Esquimalt, B.C., 15th Feb., 1881.

SIR,—Herewith I beg to submit, approximately, the probable total cost of the Graving Dock :—

Amount expended for Dock purposes, from 19th July, 1872, to 30th October, 1880	$183,321 23
Kinipple & Morris, balance of commission, £4,000, less £1,350 (3 years' salary of Resident Engineer @ £450 per annum) = £2,650 @ $4.85	12,852 50
Resident Engineer's salary, from 1st November, 1880, to 30th April, 1883, 30 months @ $182.25	5,467 50
Contract price for completion of Dock (Contract No. 3)	350,997 20
Insurance, 2 years @ $353.75	707 50
Storage, 2 years @ $960	1,920 00
Probable cost of Caisson, freight, duties, &c., and erection	54,853 50
Liabilities on Working Pump account	41 87
Contingencies say	10,000 00
	$620,161 30

I have, &c.,
(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 12.

The Resident Engineer to the Chief Commissioner of Lands and Works.

ENGINEER'S OFFICE,
Esquimalt, 24th Nov., 1881.

SIR,—I must respectfully take exception to the statement in a letter from Messrs. F. B. McNamee & Co. to your department, dated 21st November, namely, that the cement furnished by the Government is utterly unfit for use, and must express great surprise thereat, for I feel sure the contractors can scarcely yet have forgotten the hard work they had to perform in removing some concrete laid in error under the caisson invert, and the trouble experienced in cutting out a course of bricks in the same place, where the cement compo proved to be harder than the brick. The concrete in the apron too, though scarcely yet a month old, is so hard that with great difficulty can the point of a fine pick be driven into it.

As to the letter referred to, dated 1st August, I have already, namely on 11th August, had the honour to make a report to you, and which was to the effect that I was aware some few barrels of cement were totally unfit for use, while the contents of others might be so caked that extra labour would be required in preparing such for use, and recommending that the contractors be re-imbursed for any reasonable extra expense to which they might be put.

For this work, an allowance was made in Certificate No. 3, but the contractors have not been compelled to use worthless cement, nor would I allow them to do so.

I do not agree with the remarks that the proportion of cement to sand, &c., used in compo or concrete has been insufficient to ensure good work. I have ordered an increase where I thought it advisable, and do not consider that such of the cement which had become caked in the barrels, but which has since been

pulverized, sifted, and mixed with cement not caked, has to any appreciable extent deteriorated from the strength of compo or concrete.

As to the statement that water is forcing itself through the works on account of the compo not having set, I beg to state that, if my instructions to the contractors (contained in my letter to them of September 16th, 1881, namely, that the water behind the Cofferdam was to be pumped out and *kept down*) had been complied with, such a thing could not have occurred, as there would have been no water; and it is because water has been allowed to accumulate and remain around and sometimes over the brickwork and concrete, that the compo probably has not set as rapidly as it ought to have done, simply because it has not had the chance, on account of its being constantly kept damp. I feel satisfied, however, of the security of the work, provided it has fair play by the contractors. I have continuously made tests of the cement during the progress of the works, and have found its quality excellent.

The contractors are, I believe, taking measures to have the water, which I may say is nearly wholly collected from surface drainage, kept down. This can be done either by a syphon of suitable capacity or by moving the suction of the auxiliary pump from its present position to the inside of the inner invert in the trench leading to the main pump wells, and the sooner this is done the better it will be for the work.

I have, &c.,

(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 13.

The Resident Engineer to the Chief Commissioner of Lands and Works.

ENGINEER'S OFFICE, ESQUIMALT,
5th December, 1881.

SIR,—I have the honour to inform you I have read four letters dated December 2nd, from Messrs. F. B. McNamee & Co., addressed to your department.

1. As regards the one referring to Mr. A. Muir, the Engineer in charge of the pumping machinery, I have nothing to add to what I have already said as to his fitness for the position he occupies, as I continue to hold the same favourable opinion of him.

2. With respect to the one commenting on my report as to progress and the materials necessary for the work, I took the trouble to ascertain the number of bricks on the ground at the date of my report, and arrived at my conclusion by counting the number of car loads on the works at the time, and which, with the number since delivered, has proved my calculation correct.

Even allowing the Contractor's estimate of the quantity of bricks on the ground to have been 20,000, instead of my estimate of half that number, I beg to state they ought, at least, to have had upwards of a million ready for use.

I quite agree with the Contractors that the number of bricklayers employed since the 17th November, namely, two, was sufficient to lay the extremely inadequate supply admitted to be on hand, provided time was of no object in completing the works; if, however, the full gang of bricklayers, which after all never numbered, I believe, more than 6 or 7 at a time, had been kept on, the Contractors' supply of bricks would have been exhausted many days ago; as it is the two men now employed ought easily to lay all the bricks that remain in a couple of days.

I am glad to hear the preparation of clay for brick making, and the extension of the yard, is progressing. I was informed, it seems incorrectly, that the men at the brick yard had been paid off, hence my suggestion that this work should be taken in hand.

3. As to the letter referring to correspondence between your department and Messrs. F. B. McNamee & Co., at Montreal, I take it for granted you will deal with that matter yourself.

4. As to the letter again referring to the defective state of the cement, I repeat what I have already stated, namely, that I am satisfied the work already executed will prove to be most substantial. Of the proportion of cement to sand, &c., I contend, with due respect to the Contractors, I am the best judge. I have continuously made tests of the cement since the works started, and have not allowed worthless cement to be used.

As to the cement bricks which Mr. Muir is stated to have said would not carry their own weight, I beg to state these bricks were made from cement out of fir casks on the lower floor of the warehouse, some 150 in number; and it was because I suspected the quality would be inferior to that in the oak casks that I ordered none but the oak casks should be used until I had made further tests. My instructions on this point have been carried out.

The statement that the bricks did not carry their own weight must have been a figure of speech, as such an occurrence only takes place when flaws are present.

The statement of the Contractors that hydraulic cement is deemed to set harder under water than when simply exposed to the atmosphere is incorrect, and the fact of immersing the cement bricks under water as soon as they are pressed out of the moulds is for the very purpose of submitting the cement to a very searching or crucial test.

My statement that I was satisfied of the security of the work provided it has fair play, referred to those portions which were and are still surrounded by water; which water ought not to be allowed to accumulate, but should be pumped out, and this the Contractors have yet failed to do.

The cement testing machine is, I beg to state, where it ought to be—in my possession; and I consider the complaints of the Contractors, that they are compelled to use worthless cement, to be groundless. I am forced to the conclusion, from the Contractors' letters, that these complaints have been put forward with a view of covering their own serious failure to provide sufficient materials for the due fulfilment of their contract.

I have, &c.,

(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 14.

The Resident Engineer to the Chief Commissioner of Lands and Works.

ENGINEER'S OFFICE, ESQUIMALT,
23rd February, 1882.

SIR,—I have the honour to inform you that on the 31st December, 1881, there were nearly 160 tons of cement in the storehouse at Esquimalt, none of which was used till the 7th February; since then the amount used has been, up to last night, about 72 tons.

The harbour quay wall now in course of construction, has been raised 7 feet in height since work on it was resumed on the 7th instant, and it has yet to be raised 12 feet more to bring it to coping level.

I beg to recommend, therefore, that 50 tons of Portland cement be ordered from San Francisco, to leave there per mail steamer on 28th February, or on whatever other day may be appointed for her sailing.

I have made tests of the Portland cement sent from England and now on hand in San Francisco, and find the sample manufactured by White Bros. gives the most satisfactory results.

In making this recommendation, I do so more as a measure of precaution than necessity, for as the section of the wall becomes less as the wall increases in height, I believe it will be found there is sufficient cement on hand to complete all that can be done to it for the present.

I have, &c.,
(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 15.

The Resident Engineer to the Chief Commissioner of Lands and Works.

ENGINEER'S OFFICE, ESQUIMALT, B. C.,
28th February, 1882.

SIR,—I have the honour to inform you I have seen in this morning's paper the report of a statement made by you on the floor of the House of Assembly with respect to the quantity of cement required for the construction of the Dock, and with which statement my name was coupled.

In justice to myself I think it but right that the following facts should be placed on record:—

My former memoranda on the probable total cost of the Dock were based on the assumption that all the cement required was here.

The cement delivered at Esquimalt was ordered long previous to my connection with the Dock works. I need hardly state, therefore, I was never consulted as to the total quantity that would be required. That question has but recently arisen. And I may add that although the Engineers-in-Chief suggested the desirability of having the Caisson ordered, in a letter dated 21st April, 1881, received by me 19th May, and the contents of which I informed you by letter of 20th May, no mention has ever been made by them to me of the necessity of further supplies of cement being shipped from England.

When, however, Dock construction was commenced in August last, I found that the stock on hand was totally inadequate to complete the works, and as it was rapidly being used up, I informed you by letter on 4th October, 1881, that 915 barrels of cement (fir and oak) had been used, and that there were about 1,800 barrels (fir and oak) left; and I then suggested that the Corporation of the City of Victoria should be requested to return at once the amount (45½ tons) of cement borrowed from the Government stock.

On 8th October I further suggested the advisabilty of ordering 100 tons of cement, by cablegram, from England, and pending a reply I was expecting from the Engineers-in-Chief as to the total amount required, I advised you, early in November, that the order for 100 tons should be changed to 300 tons, and this was done.

These amounts were mentioned, by letters, by me to you, not as what would be sufficient for the total amount required for completion, but merely as a quantity necessary in the immediate future.

On 12th November I informed you that I estimated that at least 4,400 tons of cement, in addition to the quantity already received from England (about 700 tons), would be required, and I suggested that arrangements for the supply of this quantity should be made as soon as possible.

The Engineers-in-Chief have not replied to me directly as to the total quantity of cement required, but they have, I believe, informed you by cablegram that 5,000 tons in all would be wanted. This estimate of theirs, received by you subsequent to my letter to you of 12th November, agrees, approximately, with mine.

The 100 tons of cement included in the Estimates of last year as a re-vote, was intended as a quantity that might be required to overcome any temporary difficulty occasioned by running water, which I apprehended might be encountered during the excavations at the entrance; freshly imported cement, providing the quality was good, being more suitable for such a purpose than that which might have been on hand for some time.

I have, &c.
(Signed) W. BENNETT,
Resident Engineer.

EXHIBIT No. 16.

Chap. 20.—An Act respecting the Graving Dock at Esquimalt.

[29th April, 1879.]

Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:—

1. In the event of the Government of the Dominion of Canada carrying into effect the provisions of 37 Victoria, Chap. 17, Section 1, Statutes of Canada, it shall be lawful for the Lieutenant-Governor in Council to award such contracts, construct such works, and make such payments, as may be necessary, in his discretion, to secure the construction of the Graving Dock at Esquimalt.

Authorizes expenditure of moneys that Dominion Government may pay on account of Graving Dock at Esquimalt.

EXHIBIT No. 17.

Extracts from Test Book of Cement made by Resident Engineer.

NOTE.—The following table represents the first two and last four pages of the book of tests.

No. of Brick.	When made.	When tested.	Age of brick.	breaking strain.	Sample taken from.	Remarks.
	1876.	1876.	Days.	lbs.		
1	Dec. 22	Dec. 27	5	663	Fir cask, first cargo	Immersed in water as soon as set.
2	,,	Dec. 29	7	801	,,	,, ,,
		1877.				
3	,,	Feb. 15	55	*	,,	* Did not break at 1119¼ lbs. Again tested 3½ mos. after; broke at 885 lbs.
	1877.					
4	Dec. 7	Dec. 15	7	376½	,,	
5	Dec. 21	Dec. 29	7	563	,,	Immersed in water after 24 hours.
6	,,	,,	7	805½ †		† W. R. Clarke' cement.
	1878.					
7	Jan. 10	.....	7	.....	Oak cask, first cargo	
8	,,	Jan. 18	7	776	,,	Immersed in water after 24 hours.
9	,,	,,	7	881	,,	No. 7 broke in taking out of mould.
10	April 12	April 20	7	303	Fir cask	Immersed in water when 48 hours old.
11	,,	,,	7	‡	,, ...	‡ Broke in screwing down.
12	April 24	May 2	7	653	,, fr. Dockyard	Immersed in water when 7 hours old.
13	,,	,,	7	639	,, ,,	,, ,, ,,
14	Sept. 30	Oct. 8	7	475	,, ...	,, ,, 17 ,,
	1879.					
15	Jan. 2	Jan. 10	7	401	Oak cask A.....	,, ,, 17 ,,
16	,,	,,	7	0	,, ...	Nos. 15, 16, 17 were unsatisfactory tests
17	,,	,,	7	352	,, ...	as bricks were frosted before setting.
18	Jan. 4	Jan. 13	8	230	Fir cask B.	Immersed in water when 19½ hours old.
19	,,	,,	8	180	,, ...	Nos. 18, 19, 20 were unsatisfactory tests
20	,,	,,	8	30	,, ...	as bricks were frosted before setting.
21	Jan. 9	Jan. 17	7	0	Oak cask A.....	Immersed in water when 17 hrs. old.
22	,,	,,	7	262	,, ...	No. 21 broke in taking out of
23	,,	,,	7	275	,, ...	mould.
24	Jan. 17	Jan. 25	7	0	Fir cask B.	Immersed in water when 18 hrs. old.
25	,,	,,	7	432	,, ...	No. 24 broke in taking out of
26	,,	,,	7	537	,, ...	mould.
27	Jan. 27	.....	.....	.....	,, ...	Nos. 27 and 28 broke before putting
28	,,	.....	.....	.....	,, ...	in water.
29	Jan. 28	Feb. 5	7	433	,, ...	Immersed in water 16½ hours after
30	,,	,,	7	334	,, ...	being made.
	1881.	1881.				
4	Nov. 28	Dec. 6	7	496½	Sample B.	
5	,,	,,	7	251½	,, ...	
6	,,	,,	7	327	,, ...	
7	Nov. 29	Dec. 7	7	219	Sample C.	
8	,,	,,	7	.....	,, ...	
9	,,	,,	7	226	,, ...	Immersed in water 24 hours after
10	Nov. 30	Dec. 8	7	433	Sample D.	being made.
11	,,	,,	7	460	,, ...	
12	,,	,,	7	475½	,, ...	
13	Dec. 2	Dec. 9	7	394	Sample 1 from	
14	,,	,,	7	386½	Knight, Beavan,	
15	,,	,,	7	181	& Sturge.....	
93	Dec. 7	Dec. 15	7	297	Fir cask, lower floor	
94	,,	,,	7	266	,, ,,	,, ,, slight flaws
95	,,	,,	7	385½	,, ,,	
13	Dec. 8	Dec. 17	8	577½	Sample A.	
14	,,	,,	8	400	,, ...	
15	,,	,,	8	438	,, ...	
16	Dec. 9	,,	7	305	Sample B.	
17	,,	,,	7	385½	,, ...	Immersed in water 24 hours after
18	,,	,,	7	391	,, ...	being made.
19	Dec. 11	Dec. 19	7	341½	Sample C.	
20	,,	,,	7	236	,, ...	
21	,,	,,	7	300	,, ...	
22	Dec. 12	Dec. 20	7	473	Sample D.	

EXHIBIT No. 17.—*Continued.*

No. of Brick.	When made.	When tested.	Age of brick.	breaking strain.	Sample taken from.	Remarks.
	1881.	1881.	Days.	lbs.		
23	Dec. 12	Dec. 20	7	495	Sample D.	
24	,,	,,	7	480	,, ...	
16	Dec. 13	Dec. 21	7	578¼	Sample 2, White Br	
17	,,	,,	7	600½	,, ,,	
18	,,	,,	7	410	,, ,,	
19	Dec. 14	Dec. 22	7	300	Sample 1 from Knight, Beavan, & Sturge.....	Immersed in water 24 hours after being made.
20	,,	,,	7	297		
21	,,	,,	7	292		
96	Dec. 20	Dec. 28	7	485	Oak cask, lower floor	
97	,,	,,	7	424	,, ,,	
98	,,	,,	7	535	,, ,,	
99	Dec. 21	Dec. 29	7	260	Hardened cement pounded up ...	
100	,,	,,	7	307		
101	,,	,,	7	300		
102	Dec. 22	Dec. 30	7	480	Oak cask, lower floor	
103	,,	,,	7	428½	,, ,,	,, ,, frosted & flaws.
104	,,	,,	7	315½	,, ,,	
		1882.				
105	Dec. 29	Jan. 6	7	421	Hardened cement pounded up ...	Immersed in water 36 hours after being made.
106	,,	,,	7	490		
107	,,	,,	7	388		
	1882.					
1	Jan. 9	Jan. 18	7	174	Fir cask, lower floor	
2	,,	,,	7	185	,, ,,	,, ,, badly made.
3	,,	,,	7	145	,, ,,	
4	.....	.....		.....		
5	Jan. 19	Jan. 28	7	464	,, ,,	
6	,,	,,	7	240	,, ,,	,, ,,
7	Feb. 4	Feb. 13	7	724	Oak cask, lower floor	
8	,,	,,	7	606	,, ,,	,, ,, flaw.
10	Feb. 11	Feb. 20	7	115	Fir cask, lower floor	,,
11	,,	,,	7	581	,, ,,	,,
13	Feb. 13	Feb. 22	7	616	Oak & fir mixed, lower floor	
14	,,	,,	7	667		
15	,,	,,	7	667½	,, ,,	,, ,, frosted.
16	Feb. 14	Feb. 23	7	484	,, ,,	
17	,,	,,	7	577	,, ,,	
18	,,	,,	7	675	,, ,,	
19	,,	,,	7	.....	J. McKay's No. 1..	,, ,, broke.
20	Feb. 15	Feb. 24	7	457	Fir and oak mixed.	
21	,,	,,	7	380½	,, ,,	,, ,, badly frosted.
22	Feb. 16	Feb. 25	7	606½	,, ,,	
23	,,	,,	7	551½	,, ,,	,, ,, air holes, frosted
25	Feb. 20	March 1	7	594	,, ,,	
26	,,	,,	7	634½	,, ,,	,, ,, ,,
27	,,	,,	7	609	,, ,,	
28	Feb. 21	March 2	7	577	,, ,,	,, ,, white specks,
29	,,	,,	7	553	,, ,,	[and frosted.
30	,,	,,	7	664	,, ,,	,, ,,
31	Feb. 22	March 3	7	547½	,, ,,	
32	,,	,,	7	408	,, ,,	,, ,, cracked.
33	,,	,,	7	857	,, ,,	
34	Feb. 23	March 4	7	566	,, ,,	
35	,,	,,	7	699	,, ,,	
36	,,	,,	7	545	,, ,,	,, ,,
37	Feb. 25	March 6	7	690	,, ,,	
38	,,	,,	7	715½	,, ,,	
39	,,	,,	7	641	,, ,,	

EXHIBIT No. 18.

Agreement between Mr. W. Bennett and Messrs. Kinipple & Morris.

W. Bennett, Esq.,
New Works, Bute Docks.

19th June, 1875.

DEAR SIR,—In reference to the conversation we have had with you as to your proceeding to Victoria, British Columbia, and acting on our behalf as the Resident Engineer to superintend the construction of a Cofferdam and Graving Dock Works at Esquimalt for the Government of British Columbia, we hereby appoint you as our Resident Engineer on the above works for a period of Three Years, at a salary of £450 per annum (Four hundred and fifty pounds per annum), which will be paid to you monthly, in dollars, by the Government in Victoria, at the rate of 4.86 dollars to the £ sterling, as per our terms of agreement with the Government for professional services; the date of your services to commence one month previous to your arrival in Victoria, which date shall not be later than the Twelfth August, 1875, and to terminate one month after your leaving Victoria at or about the expiration of the Three years; and we agree that should your services be required for a few months beyond the above time, by reason of the non-completion of the said works, you shall continue to act as the Resident Engineer until the completion of the said works, for which services you will be paid monthy at the rate of £450 per annum.

We further agree to pay you a bonus of £100 (One hundred pounds sterling) at the end of the third year provided that you shall have duly performed the duties of Resident Engineer under this agreement up to that time; and if you are required to stay for a fourth year, or any part thereof, you shall be entitled to a further bonus of £50, or a proportionate part thereof, for any portion of such fourth year. If from any cause whatever, which in our opinion shall be deemed reasonable, the Government shall, under the provisions of the agreement existing between ourselves and the Government, require that another Resident Engineer be appointed in your place, this agreement shall thereupon determine, except so far as the remuneration to yourself up the expiry of one month after date of the arrival in Victoria of the substituted Resident Engineer.

It is understood that you give your whole and undivided attention to the work (unless otherwise instructed by us), and faithfully carry out all our instructions, and you will be held responsible for the same.

It is understood that you make every dispatch on the journey to and from British Columbia.

We agree to pay your travelling expenses out and home, as well as for any stationery that you may require on the works.

An Engineer's Office will be provided by the Contractors.

In the event of the death of one or both of us, our trustees or executors will carry out this agreement; and in the event of your being incapaciated of performing your duties, and being obliged through illness to return to England, the expenses of your journey home will be paid as if the work had been completed.

Yours truly,
(Signed) KINIPPLE & MORRIS.

I agree to the above.
(Signed) WILLIAM BENNETT, JUNR.

EXHIBIT No. 19.

Estimate of Quantity of Cement for the Esquimalt Graving Dock.

	C. yds.	
CONCRETE.		
8,307 c. yds. 5 to 1	1,384½	
1,117 ,, 5 to 1	186	
15,785 ,, 7 to 1	1,973	
545 ,, 5 to 1	91	
247 sup. yds., 6 in. thick = 41 c. yds. 3 to 1	10	
319 ,, 4 ,, = 35 ,, 3 to 1	9	
86 c. yds. 5 to 1	14½	
518 ,, 10 to 1	47	
2,900 ,, 14 to 1	193	
265 ,, 5 to 1	44	
300 ,, 5 to 1	50	
Add for loss of bulk and waste 15 per cent.	600	
		4,602
BRICKWORK.		
4,196 c. yds. in 4 to 1, say ⅓ compo, and ⅔ of compo, cement		466
1,886 ,, in 3 to 1, say ¼ compo, and ¾ of compo, cement		209
STONEWORK.		
361 c. yds. 2 to 1, say 1/10 joints and beds, and ½ of compo, cement	18	
3,702 ,, 3 to 1, say 1/10 joints and beds, and ⅓ of compo, cement	123	
88 ,, 4 to 1, say 1/10 joints and beds, and ¼ of compo, cement	2	
		143
		5,420
Add for pointing and grouting 5 per cent.		271
		5,691 c.y.

5,691 c. yds. @ 21 1/11 bushels × 113 lbs. = 13,563,164 lbs.
= 6,055 tons.

NOTE.—No allowance has been made for stones thrown into 7 to 1 concrete, nor for the deduction of one-seventh part of cement if machinery be used. Any saving so effected will counterbalance any extra quantities used on account of deterioration of quality.

(Signed) W. BENNETT,
13th March, 1882. *Resident Engineer.*

EXHIBIT No. 20.

Estimate of Cement.

CONCRETE :—

10,825 cubic yards of 5 to 1 compo, as per Bill of Quantities.
15,785 ,, 7 to 1 ,, ,, ,,
518 ,, 10 to 1 ,, ,, ,,
2,900 ,, 14 to 1 ,, ,, ,,

Add one-fifth more to each of the above quantities for difference in volume between dry and mixed materials :—

$\frac{10,825+1\text{-}5\text{th}\ (10,825)}{6}=\frac{12,990}{6}=2,165$ cubic yards of cement.

$\frac{15,785+1\text{-}5\text{th}\ (15,785)}{8}=\frac{18,942}{8}=2,368$,, ,,

$\frac{518+1\text{-}5\text{th}\ (518)}{11}=\frac{621.6}{11}=57$,, ,,

$\frac{2,900+1\text{-}5\text{th}\ (2,900)}{15}=\frac{3,480}{15}=232$,, ,,

4,822 ,, ,,

247 sup. yds. 6in. thick = 123 c. yds. 3 to 1 compo.
319 ,, 4 ,, = 105 ,, ,,

$\frac{228+1\text{-}5\text{th}\ (228)}{4}=\frac{273}{4}=68$,, ,,

Total Concrete ..... 4,890 ,, ,,

Or, 1 c. ft. Portland Cement = 83 lbs. (nearly).
27 ,, ,, = 2,240 ,, = 1 c. yd. = 1 ton.

∴ Amount of Concrete ... 4890 tons.

BRICKWORK :—

1 cubic yard of brickwork, with ⅝ key, will require 150 lbs. of cement in 4 to 1 compo.
,, ,, ,, ,, 200 ,, 3 to 1 ,,

1,186 c. yds. 3 to 1 compo × 200 = 377,200 lbs.
4,196 ,, 4 to 1 ,, × 150 = 629,400 ,,

1,006.600 ,, ÷ 2,240 = 450 tons nearly.

MASONRY :—

9,656 c. ft. of masonry in 2 to 1 compo.
103,423 ,, ,, 3 to 1 ,,

There will be required (about) 2 superficial feet of compo to each cubic foot of masonry, with ⅝ key.

$\frac{9,656\times 2}{32}=604$ c. ft. of compo = 22 c. yds. $\frac{22+1\text{-}5\text{th}\ (22)}{3}=9$ c. yds. of cement.

and $\frac{103,423\times 2}{32}=6464$ c. ft. compo = 240 c. yds. $\frac{240+1\text{-}5\text{th}\ (240)}{4}=72$ c. yds. of cement.

RECAPITULATION :—

Concrete 4,890
Brickwork 450
Masonry 81

Total..... 5,421 tons.
Or, if 96 lbs. = 1 c. ft., 1 c. yd. = 1.16 ton, then, total 6,216 ,,

W. S. GORE, S. G.

NOTE.—Or, if 94¾ lbs. = 1. c. ft. (as ascertained by Committee) then 1 c. yd. = 1.142 tons.

∴ 1.142 × 4,791 + 450 = 6,126 tons, total.

W. S. GORE, S. G,

Exhibit No. 21.

Approximate Estimate of total amount of Portland Cement required for the completion of the Graving Dock, according to the Secification and Schedule of Quantities.

Note.—Assumed that 1 ton of cement equals 1 cubic yard of same.

					Tons.
Concrete.					
75	cub. yds. of 3 to 1,	of which cement	one-third		25
10,825	,, 5 to 1	,,	one-fifth		2,165
15,785	,, 7 to 1	,,	one-seventh		2,255
518	,, 10 to 1	,,	one-tenth		52
2,900	,, 14 to 1	,,	one-fourteenth		207
					4,704
Brickwork.					
Note.—Assumed that one-third of brickwork is mortar.					
1,886	cub. yds. 3 to 1 mortar				210
4,196	,, 4 to 1 ,,				350
Ashlar Masonry.					
4,153	cub. yds.			say	200
					5,464
10 per cent. added for pointing, lipping, deterioration in transit, waste, &c., not included in above estimate					546
				Tons or cubic yards	6,010

(Signed) F. C. Gamble,
Assistant Engineer.

Victoria, 3rd March, 1882.

Exhibit No. 22.

Record of tests of Cement Imported from San Francisco.

No. of brick.	When made.	When tested.	Brick in water.	breaking strain.	Put in water after being made	Sample.
	1882.	1882.	Days.	lbs.	Hours.	
1	March 6	March 14	7	705	24	White Bros. per S. S. 1st shipment from San Francisco, "Elder."
2	,,	,,	7	700	24	,, ,,
3	,,	,,	7	712	24	,, ,,
4	,,	,,	7	635	12	,, ,,
5	,,	,,	7	625	12	,, ,,
6	,,	,,	7	629	12	,, ,,
7	March 7	March 15	7	721½	36	,, ,,
8	,,	,,	7	688	36	,, ,,
9	,,	,,	7	582	36	,, ,,
10	March 9	March 18	7	609	36	,, ,,
11	,,	,,	7	490	36	,, ,, bad flaw.
12	,,	,,	7	588	36	,, ,, ,,
13	March 14	March 22	7	478	24	,, ,, flaw.
14	,,	,,	7	572	24	,, ,,
15	,,	,,	7	350	24	,, ,, flaw.
16	March 15	March 23	7	762	24	,, 2nd shipment per "Idaho."
17	,,	,,	7	645	24	,, ,,
18	,,	,,	7	619	24	,, ,, trace of flaw.

EXTRACTS FROM CORRESPONDENCE LAID BEFORE DOCK COMMITTEE.

Extract from letter from Mr. Sproat, dated 30th April, 1874.

"I never believed in the Dock from any other point of view than as an Imperial, or at least a Dominion, work, seeing that commercially it might have caused serious losses to the Province, had the Province undertaken it; but even the Admiralty here could with difficulty be brought to see the value of the Dock."

Extracts from letter from Mr. Sproat, dated 25th June, 1874.

"The quantities" of cement "required will, from time to time, depend on the progress of the works.* *

"Where whole shiploads are not really wanted they should not be sent, and we should be free to send less or more by any vessels, even by way of San Francisco, if necessary. The great object being to suit the supplies to the requirements, as far as may be. * * * * *

"The point I wish to bring out is, that the article can only be got from England, and is an article which, if you have it when you don't want it or can't use it, will spoil more or less and make the works in which it may be used correspondingly defective or endanger them. This is what Engineers tell me, and it is the experience of Messrs. Brassey.

"I am not able, at present, to find what quantities of cement will be required in the beginning of the permanent works. This will depend upon the agreement of the Admiralty in the proposal as to the material of the Dock, which, on the appointment of an Engineer, I will make to the Admiralty; but I will be governed in the whole matter by the facts and the above considerations."

Mr. Sproat to the Provincial Secretary.

LONDON, July 16th, 1874.

SIR,—

* * * * * * *

The Engineers write to me from Greenock, 14th July, 1874:—

"We have this day carefully gone into the class of construction that appears to us best suited for the front or quay on each side of the entrance of the Dock, and we find that it will require about 650 tons of Portland cement."

* * * * * * *

(Signed) GILBERT MALCOLM SPROAT.

Extract from Specification for Supply of Portland Cement, dated 25th July, 1874.

"The total quantity of Portland cement required during the present autumn, for shipment from London to Esquimalt Harbour, Victoria, British Columbia, is about 600 tons, which quantity may be sent out in portions as may be directed by the Agent-General for British Columbia, 4, Lime Street Square, London, E.C.

(Signed) "KINIPPLE & MORRIS."

Extract from letter from Mr. Sproat, dated 7th October, 1874.

"Our policy at this end has been to furnish the Government with what will enable the permanent works to be commenced next summer."

Extract from letter from Mr. Sproat, dated 6th November, 1874.

"The above does not exhaust Mr. Kinipple's recommendation of quantities required *at this time* to be shipped."

Messrs. Kinipple & Morris to Hon. R. Beaven, Chief Commissioner of Lands and Works.

LONDON, January 13th, 1875.

SIR,—We have the honour to inform you that we have this day sent you a rough draft of conditions for the carrying out of the main Dock works, which we shall be glad if you will look over and return with any alterations which you may deem necessary. We have, &c.,

(Signed) KINIPPLE & MORRIS.

Extract from letter from Messrs. Kinipple & Morris, dated 20th January, 1876.

"In the draft copy of conditions for the main works, forwarded to you by the last mail, we wish to call your attention to the fact that, where it has been possible, in the general direction of the works, to insert the words 'Chief Commissioner of Lands and Works,' in lieu of the word 'Engineers,' we have done so, at the same time we venture to submit that great care should be exercised in altering the conditions in this respect."

Mr. Sproat to the Provincial Secretary.

LONDON, 4 LIME STREET SQUARE, E.C.,
February 18th, 1875.

SIR,—Having now completed the shipments of cement recommended by the Engineers for the Esquimalt Dock, Messrs. Kinipple & Morris, in their specification of 25th July, 1874, namely, for about 600 tons, by sending—

340½	per	"H. Home."
75	,,	"Prince of Wales."
201	,,	"Blanche."
616½ tons.		

I beg to enclose a copy of the above specification, and to make the following remarks relative to these supplies:—

* * * * * * *

The price of cement depends, to some extent, on the price of fuel, and as that has lately fallen, I shall, before leaving, review the prices and get tenders to test present prices of cement, though it will not be necessary, in the Engineers' opinion, to ship much more at present, at least until a clearer view of the probable progress of the work continuously is obtained. Once begun, however, I suppose the cheapest plan will be to push the work rapidly, and it must be remembered that practically it takes nearly three-quarters of a year to get things from England, and there is always the possibility of shipwreck, involving direct loss, and in such a work as the construction of a Dock, heavy indirect loss, by stoppage of work, more particularly if such an essential (after a certain stage of progress) as cement were in short supply.

I am, &c.,
(Signed) GILBERT MALCOLM SPROAT.