

LABORATORY

THE OLYMPIC PORTLAND CEMENT CO., Ltd.

Bellingi	ham, Wash.,	De	e, /.	_1914
	Analysis of San	ple of		
Roe	d from	m	. J.	ter
No	Received_			_191
Silica	(Si O ₂)		7	04937
Alumina	(Al ₂ O ₃)		4	70619
Iron	$-(Fe_2 O_3)$			401.84
Lime	(Ca O)		62	318206
Magnesia	(Mg O)			48 :63
Sulphur	(S O ₃)		n	me /
Loss on Igniti	on		24	02
			99	95
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		-	THE CE	IEMIS I

THE OLYMPIC PORTLAND CEMENT. CO., LTD.

HEAD OFFICE: LONDON, ENGLAND

WORKS AT BELLINGHAM, WASH.

ADDRESS ALL COMMUNICATIONS TO THE COMPANY, QUOTATIONS SUBJECT TO CHANGE WITHOUT NOTICE. ALL AGREEMENTS ARE CONTINGENT UPON STRIKES, ACCIDENT, BELAYS, OR OTHER CAUSES UNAVOIDABLE OR BEYOND OUR CONTROL



AGENTS AND MANAGERS FOR THE PACIFIC COAST-BALFOUR, GUTHRIE & CO.

SAN FRANCISCO, CALIFORNIA

PORTLAND, OREGON

PORTLAND, OREGON
SEATTLE AND TACOMA, WASHINGTON
VANCOUVER R. C.

BELLINGHAM, WASH. Dec. 1, 1914.

Mr. H. G. Foster, 312 N. Cliff Ave., Tacoma, Wash.

Dear Foster: -

Attached you will find copy of the analysis of sample submitted upon your last visit to the lab.

I didn't test for the acids except the carbonates and chlorides. There is a small percentage of carbonates and quite a large percentage of chlorides, and I suppose most of the lime is present as some form of chlorides. I tested for chloride soluble in water and as calcium chloride is quite soluble in water, it is reasonable to assume that at least part of the lime is present as a chloride.

Wishing you a very happy holiday season, I am

Cordially yours,

Jist New. 12 Chiker 2" clarker with addition 550 2 7.04 9.27 27.32

11,03 4.70 6.19 4.95 10,03 1.40 1.84 147 Cox 62.31 82.06 65.65 Mgo .48 .63 .50

99.95 99.99 99.89

After 10 days, return to

Boy G.

R. R. No. 3,
FERNDALE, Whatcom Co., WASH.

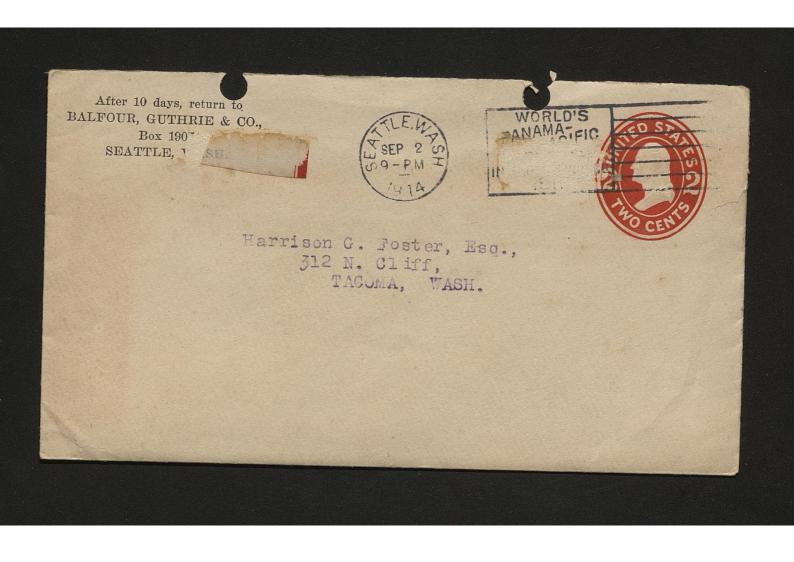
Flant G. Forter

Pan 1617

Terson

Wash

Ab 9 Forfer. Ereg I have been hoping to hear from what ofour bold him with the political sloud removed send allmost there a good vlof Repliblisen Administra From to some would like to have blow tell me if you think you have any thing that looks like you some do Things a little later, please fa that we will get bateut to the las Lade Property in Tept asserdices the information we got from the M of Surveyor Geneval. Set me hear four truly A. sow. bressentine Bon 93-RFB3 -Fern dale, Wash Will be in Leattle fuly 12 to 174 af 50/6-12 th choc It & I Chone Kein wood 1608

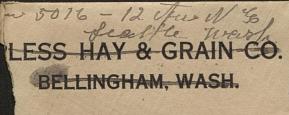


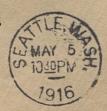
I hope, of course, to see conditions change before very long, but we have got to look at them as they are to-day.

Yours very sincerely,

arfaillie

Encl.







Hart G Foster. Esq

Box 1617-

Tacoma.

wash.

Seattle. Wash. 5--5--1916

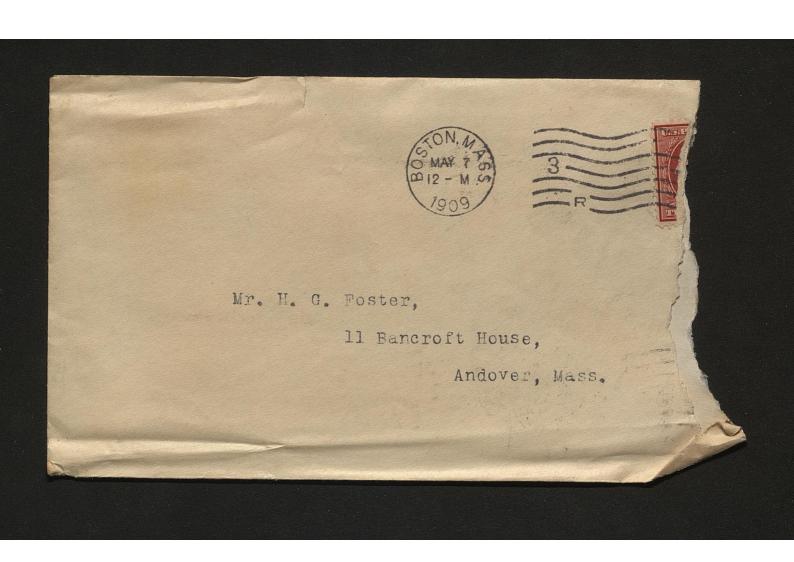
Hart G Foster. Esq

were kannedy informed me that you where in Seattle teday, and gave me your verbal message, will say, i am not trying to rush things at all, and went you to have plenty of time to committate with your parties, nor will i enter any further with any one eny negociation untill you tell me that you don't want it, i envices you copy of water Dewer report also, if you will i would like to have a report of your findings (a copy) if you will be kind enough to give it to me, also i will say if you want to see the up niver deposit i will go with you about june 10 th, and i will show you the largest deposit in Washington or the Northwest, and in case you wish we will in the event of making a sale to you held this open for your examination and as you found things here as represented you will not be dissapointed there as we will show all things as we represent them

A.v. Prespentin. --- 5016-12 th Ave. N.V. . Seattle Wash

A. von. Prospentin. Enq. Souttle. Tash. Dear Dir.

I beg herewith to submit report of the preliminary examination made by me on the 2 th inst; of mater power alta on Hillabet (Skagit County) Greek in Sect.2 T A4 N R. 10.8. WM. At the locality examined 1 found 10700 Orbis feat of mater per minute, with a natural dam site for a dam 100 feet nigh, with a base of 100 ff of length about 500 ff This would asvelop at the dam 6000 H.P. and a fossible development of 15000 H.P. the withing to unusual spring semilians the withing Streams in this locality are at their dry seather stage, and ship volume of water dam likely depends upon for the average year. Illiabets Greek has its source in three lakes aims and twelve hiles distance, at an elevation of 2000 to 2300 ff not only insuring a sentence than They with large storage pessibilities, but also, affording an eppertunity for tripling and justingling the power by installing aboutions at alliance along its source. Dear Sir. s lifferent points along its soukes Searc Welley, Wash June 11 bn , 1916

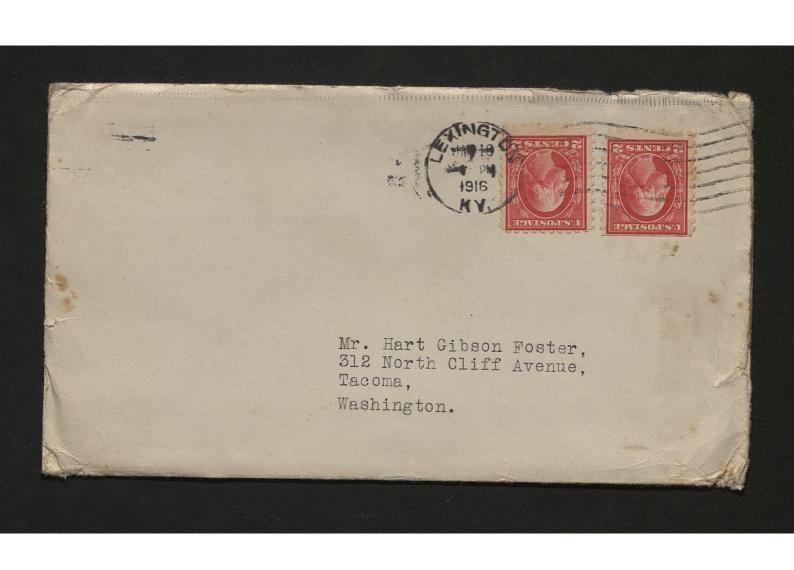




HARRY F. GOODWIN.

ELY MEYER & M.C. SIMON CLOTHES SHOP 384 WASHINGTON STREET BOSTON

Ap Meyer & M.C. Simon Clothes Shop 384 WASHINGTON STREET JOE BEESON MANAGING PARTNER T. HENRY CLARKSON ASSISTANT MANAGER TAILOR SHOPS ROCHESTER, NEW YORK BOSTON May 3, 1909. Mr. H. G. Foster, Andover, Mass. Dear Sir: As one of my valued customers during my connection with Melzar Smith Co., I am writing this personal note to inform you that I have associated myself with Messrs. Ely Meyer & M. C. Simon, 384 Washington St. Corner Franklin Street. This firm has really revolutionized the production of men's fine clothes, and by their advanced methods and high artistic ideals they have created a class of garments of their very own --- designed and made in their own tailoring shops at Rochester, New York. I should like to have an opportunity of showing you these garments and their exclusive haberdashery, which I am sure will appeal to you, and I trust that you will favor us with a call at your convenience. Respectfully yours, Harry F. Goodwing



Lexington, Kentucky, January 18, 1916.

Mr. Hart Gibson Foster, 312 North Cliff Avenue, Tacoma, Washington.

My dear Hart:

Enclosed you will find a letter from Stuart Smith which I took the liberty of opening, it having been addressed to you here, and knowing that it contained information regarding the Cement Products business, I thought it best to open before forwarding it. Stuart evidently feels well disposed toward the pipe machine, and I should judge from his letter that he has been having a rather hard time in Detroit. I will write him.

I also received your letter of January 12th explaining why the Corvallis people refused payment of note, but hope you have sent them the pallettes to take the place of the pallettes that were not satisfactory. I trust you will be able to do something with Mr. Lamont in regard to the lathes. If you should get an order for some Thomas machines you could keep yourselves busy for at least a month longer. Was very sorry to hear of Mr. Cooper's illness. Be sure to talk freely with Mr. Jackson, letting him know what you are doing and what the prospects are. Have not heard from George Browne yet but hope he will be able to make a sale, although from your letter, and also from your Cousin Beall, I should judge that the lumber company did not make a very good showing last year. We

also have had some cold weather, the thermometer hovering around zero for the past twenty-four hours. I know that you are enjoying your skating; the exercise is very good for you. The latter part of this month they are to have a carnival at St. Paul - one of the old sort - toboganning, ice-boating, skating, etc. I may be there before it is over. We are all well here except myself; I have been confined to the house for the last five days with grip but expect to meet Mr. Anderson tomorrow night in Cincinnati and go over the plans for the machines. Will probably be there three or four days; consequently will not leave here much before the first of February.

Am glad to hear your grandmother and grandfather are getting along nicely. Give them all our love.

Affectionately yours,

alien british he for the form



A.W.HANNAH, PREST.



Chicago July 24 1916.

Mr Start G. Forter: Jacoma.

Dear Start:

Received your telegram regarding offer for office furniture. the dashs to are early with 75.00 med Ithink we can get it. Did not une as requested, corts to much for the service rendered to do so. Have a long letter get of after the two oclock mail This ofternoon May be some news later



Hotel Brevoort

120 W. MADISON ST. NEAR LA SALLE

Chicago. Than I have now. When you come across be sure that my type writter comes with you as Theed it also That book Moderne Competetion. Have you written Mh. Beut, regarding got ar Tucom and whether you can expect The money promptly on machine he has at Long Beach. leal. Mill be glad to have a line or two from you. The and grie arrived och and are enjoying take breeze

Micrely Ruft

After......days, return to

.. A. w. Pressentin.......

5016-12 th Ave.N.E.

SEATTLE, WASH.





Hart.G.Fester.Esq

Lock Box 1617--

Tacoma.

wash

Seattle Wash 5-11-1916

Hart o Feater Esq

If you will be in Tacoma Saturday, I would like to meet you, unless you are sening to Seattle by that time, I want to show you something on the preparty wish you have not seen, also tell be how things are progressing I will next Sunday leave for Ferndale, (Pox PS-R F D S. Ferndale. Wash) and ston there for some time, unless wonted, I am thinking it would be a good time to go to the up River claims June S d at wish time if it suits you we will goinglate details for the trip, so as to make it as fast as possible, please let me know by return small if you can meet a trick mean part Saturdal at what time, or if you should some to Seattle. Satvice me, hoping to hear from you I am truly yours

A. von. Pressentin.

5016-12 th Ava. N. R.

Souttle.

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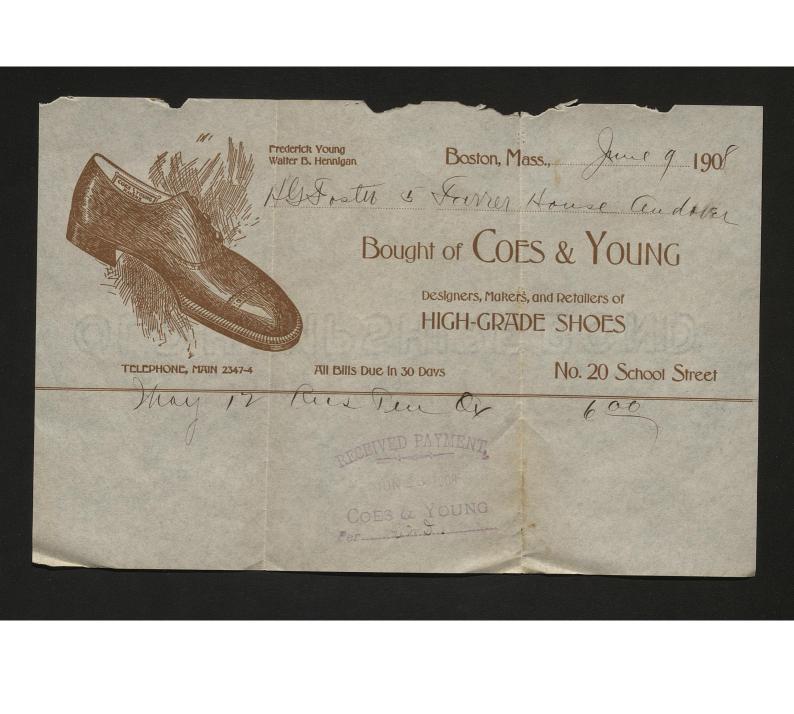
Ferudale Wash 5/15-1916 Hart & Foster Eng I am on the Routh at Ferndale sund ne es follows. RFD3- Don 93-Ferndale Weish. Would be glad to hear from ofore any time of to worked to show of one the report of the US Engine he song & there is in sight \$140,000 worth of Themse or much me the ground probly three write one here, and a hope with food news Hours bruly Avon Pressentine Bon 93-R& 33 Fernofall work



November 22d, 1916. Mr. Will A. Curless, c/o The Universal Portland Cement Co., Information Bureau, 210 So. La Salle St., Chicago, Illinois. Dear Sir: We desire to advise you that the property and business of The Colorado Concrete Manufacturing Company are for sale. This business, as you will probably recall was started in connection with a construction business, being operated under the same management at the time that The Colorado Concrete Manufacturing Company was inforporated. (January 1912). The reason for disposing of this business may be attributed to other interests of the management and principal stockholders, having grown to such an extent that they are unable to devote the proper time to the management of the concrete pipe business. The plant has not been run to capacity, nor even steadily.. The business has not been pushed and the only sales that have been made are practically re-orders from satisfied customers; these consist principally of The Denver and Rio Grande Railroad Company, The City of Colorado Springs, El Paso County, most of the local plumbers and the surrounding counties. On account of not being in a position to follow up the business and having salesmen on the road to look into new construction matters, we have lost many sales. The fact has been established, that if the business could be taken over by parties who would devote their entire time to the concrete pipe business, that the sales would be materially increased and the business would show a satisfactory profit. Recently The Colorado Concrete Manufacturing Company have received inquiry from Esterline and Angus of Indianapolis, Indiana. These engineers sent a schedule and asked for private information regarding the business of the Company. At that time, not knowing the status of the engineers, the Company did not send them the information requested.

Page-2. Nov. 22d, 1916. W.A.C. Herewith attached is a report on the business done. and other data that will give you an idea as to what we have done and what can be expected from the business as established. As for the quality of the pipe made on the machine in our plant it is par excellence as shown by tests made in the laboratory at Colorado College by municipalities and individual interests. Copies of tests hereto attached. Our experience in this business shows that we are able to compete with the Clay plants established in Denver and Pueblo, Colorado. We have solicited and secured orders beyond these places, shipping pipe thru their teritories. If you are interested in the above, kindly advise within a reasonable time, Yours very truly, THE COLORADO CONCRETE MANUFACTURING COMPANY. By Commission WMW-S

WILLIAM A. CURLESS 1242 ROSEDALE AVENUE CHICAGO, ILLINOIS November 22, 1916. Mr. Harrison G. Foster, 286 Laurel Ave., St. Paul, Minn. Dear Mr. Foster: Have had very good success in getting information on concrete pipe from the Colorado Concrete Mfg. Co., of Colorado Springs. Mr. E. C. vanDiest, Manager was out of the city but Mr. W. M. Wilson, Auditor for the company, filled in the Esterline & Angus schedule in a very complete way. He also furnished data on costs and other information. For the way the business here has been run it makes a good showing and if I am as successful in getting all the information of like character, while on this trip; will be repaid and taken with our report the information will go a long way toward success. Am leaving for Salt Lake City, Utah, tomorrow morning. Will spend Friday there and go on west. with very best regards, Sincorely yours, Miliam a. Ceurless



THIS agreement made and entered into this twentyfirst day of November, nineteen hundred and eighteen, by and
between William A. Curless of Pittsburgh, Pennsylvania, party
of the first part, Tuxill Realty Co., of New York, party of the
second part, Bayside Homes Co., Inc. of New York City, New York,
party of the third part, and C. L. Fellows of East Stroudsburg,
Pennsylvania, for himself and his associates, party of the
fourth part.

Whereas the first party hereto owns or controls and is able to deliver certain patents and rights covering concrete sewer pipe machinery.

And whereas the second and third parties hereto respectively own certain lands on Long Island containing sand and gravel useful in the making of concrete sewer pipe.

And whereas all the parties hereto desire to organize a corporation under the laws of the State of New York for the purpose of acquiring the patents and rights of the first party and the lands of the second and thire parties, and enter into a business, interalia, for manufacturing concrete sewer pipe for the market.

Therefore witnesseth: That is hereby agreed that the corporation shall be organized by the parties hereto with a capitalization of One Million Dollars (\$1,000,000) for the purpose of carrying out the above mentioned intent, the capital stock to consist of Seven Hundred Fifty Thousand Dollars (\$750,000) common stock and Two Hundred Fifty Thousand Dollars (\$250,000) of seven per ment. 7% preferred stock, the said perferred stock not to further participate in the distribution of profits in excess of said seven per cent (7%).

1. The first party hereto agrees to and with the other parties of this agreement, to sell, assign, transfer and set over unto the said proposed company the following patents and rights covering the making of machinery for the manufacture of concrete sewer pipe.

To wit: first, patent issued to Thomas W. Hammond, which said patent is now held by the concrete pipe and machinery

company, a corporation organized and doing business under the laws of the State of Washington; second, three other patents also covering machinery for the manufacture of concrete sewer pipe, the latter three now being owned by Harrison F. Foster and William A. Curless the aforesaid patents being known as the Thomas Machine, Thomas Improved Machine and the Thomas-Hammond Machine patents; third all pending applications for patents covering or pertaining to glazed concrete sewer pipe machinery applied for by the first party hereto or interests with which he has been or is now identified; fourth, the transfer of the title to the corporation of the above mentioned four patents and the rights under the same, are to be made subject to the following: To wit: a. The right previously sold to Arthur S.Bont or the California Glazed Concrete Pipe Company, to make, use and sell these machines, limited for use in State of California. b. The right sold to Hammond and assigns to make, use and sell these machines, limited for use in the States of Oregon and Washington. c. The right hereto sold to others to manufacture and sell the pipe in other territory west of the Rocky Mountains.

d. The right to manufacture and sell glazed concrete sewer pipe in the State of Oklahoma and in Saginaw, Michigan, and in the northern peninsula of Michigan.

The party of the first part hereby agrees that from this day forth, provided the within described corporation is organized, he will, if any other improvements are devised by him for the improvement of betterment of concrete sewer pipe machinery, without further consideration, turn the same over to the said corporation.

It is further agreed by the said first party to and with the other parties hereto, that he will devote his time to the management of the said proposed corporation in the manufacture and sale ofconcrete sewer pipe, and to this he shall give his best efforts and shall receive as compensation for his services Fifty Cents (50%) per ton for all sewer pipe made and sold by the corporation, and the other parties to this agreement hereby agree that the first party shall be employed by the proposed corporation to so act as manager of the company on the basis of the terms

above mentioned, and that the patents and rights as described to be purchased.

The first party hereto is to receive as consideration for the patents and rights and Etc. agreed to be delivered to the said Corporation, Two Hundred Thousand Dollars (\$200,000) full paid non-assessible common capital stock of said proposed corporation.

11. For and in consideration of the payment of Two Hundred Sixty-Five Thousand Dollars (\$265,000) of full paid, nonassessible common capital stock of the said proposed corporation, the Tuxill Realty Co, hereby agrees to and with the other parties to this agreement to sell and to make, execute and deliver therefore to the said proposed corporation to be organized for the manufacture and sale of concrete sewer pipe, a good and sufficient deed in fee simple, subject to a first mortgage against same for One Hundred Thirty-Five Thousand Dollars (\$135,000) a certain tract of land on Long Island known as the easterly section of Beacon Hill, Port Washington, containing fifty-two acres, more or less, more particularly described on the blue print attached hereto and made part thereof, marked on map showing easterly section of Beacon Hill, Port Washington, New York, together with all rights incident and privileges appurtenant to said land, excepting and reserving, however, from the same, two cottages with the lots adjoining, as indicated on the said blue print in pencil, the said land to be taken over by the proposed corporation.

of Thirty-Five Thousand Dollars (\$35,000) of the full paid, non-assessible, common capital stock of the said proposed corporation to be organized for the manufacture and sale of concrete sewer pipe, the Bayside Homes Co., Inc., party of the third part, agrees to and with the other parties hereto, to sell and to make, execute and deliver therefore to the said proposed corporation to be organized for the manufacture and sale of concrete sewer pipe, a good and sufficient deed in fee simple, subject to two mortgages aggregating Sixty-Five Thousand Bollars (\$65,000) a certain tract of land on Long Island at Port Washington, known as the Starren

property on Manhasset Bay, containing twelve acres, more or less, more particularly described by metes and bounds on the map attached to the agreement hereto, made part hereof, marked exhibit A. together with all rights and privileges appurtenant to the said tract of land. Briefs of titles for the two described properties to wit: the one for fifty-two acres, and the other for twelve acres, are to be furnished by the owners respectively, to the other parties hereto, within a reasonable time from fate; and a brief and history of the titles of the pat-ents granted and pending, above mentioned, shall be delivered to the other parties hereto, by he party of the first part, within a reaspnable time from date. The scond party hereto, agrees to properly assure the other parties to this agreement, before this agreement is operative, that he mortgage of One Hundred Thirty-Five Thousand Dollars (\$135,000) on the property of the second party, which becomes due in Nineteen hundred and nineteen, maybe extended for a period of at least three years. C. L. Fellows for himself and his associates, hereby agrees to and with the other parties hereto, to purchase One Hundred Thousand Dollars (\$100,000) of the common capital stock of the proposed corporation to be erected for the purpose of making and selling concrete sewer pipe, above mentioned, and pay per therefore. It is hereby agreed by and between the parties hereto, each with the others, that no one of the parties is bound to carry out the covenants and agreements herein made by it, if there be any default made in the performance of any of the terms. stipulations, or wovenants herein required to be done or performed by any one of the other parties hereto.

It is agreed among the parties hereto that the proposed corporation above mentioned, shall be erected promptly with the said capitalization of One Million Dollars (\$1,0001000) as above provided for, to be divided as indicated, and that the titles to the above described premises, and the titles to the

patents and applications for patents as described and the payment for the stock to be purchased, likewise the delivery of the stock for the payment of the lands and patents purchased; and that all papers provided above and requisite shall be delivered at the office of the Tuxill Realty Co., 47 West 34th. Street, New York City, on or before the second day of January, ninteen hundred and nineteen; and that payment by C. L. Fellows for himself and his associates, of Twenty Five Thousand (\$25,000) Dollars worth of the stock of this company, agreed to be purchased by him on or before the second day of January, nineteen hundred and nineteen, shall be made at the time of the delivery of deeds, titles, and other papers are transfer in this case.

It is further agreed to and by the parties hereto, that, if it be found impracticable at this time to organize a corporation for One Million Dollars (\$1,000,000) and secure the right at this time to deliver the amount of stock above provided for to carry out the true intent of this agreement, that then, and in that case, the corporation may be organized with a capitalization of One Hundred Thousand Dollars (\$100,000) pf common stock, and the same proportion of stock of the One Hundred Thousand Dollars (\$100,000) shall be delivered to the respective parties hereto, as One Hundred bears (100) to Six Hundred (600). That is to say, the first party hereto, shall perform all the covenants he has agreed's to perform, and instead of receiving Two Hundred Thousand Bollars (\$200,000) worth of capital stock, he shall immediately.receive one-sixth (1/6) thereof, the balance to be delivered to him at such time as the corporation may be allowed to increase its capitalization to One Million Dollars (\$1,000,000) and to issue its stock to that amount, the second party shall perform its covenants as agreed upon and instead of receiving Two Hundred Sixty Five Thousand Dollars (\$265,000) worth of capital stock, it shall refeive one-sixth (1/6) thereof, the balance to be delivered at the same time as provided for in the case of the party of the first part; and the third party shall under the same circumstances perform its covenants as agreed upon; and instead of receiving Thirty Five Thousand Dollars

3

(35,000) worth of capital stock, it shall receive one-sixth (1/6) thereof, the balance to be paid at the the same time and in the same manner as provided for the first and second parties; and the fourth party, under these conditions shall perform its covenants and instead of receiving One Hundred Thousand Dollars (\$100,000) worth of capital stock in return for One Hundred Thousand Dollars (\$100,000) each, he shall receive one -sixth (1/6) thereof, the balance of the stock to be delivered at the same time and in the same manner as provided for in case of the other three parties_ hereto. It is hereby agreed among the parties hereto, that the above described properties agreed to be sold by the second and third parties respectively, be purchased under the terms and conditions as above herein stated. The agreements, conditions, terms and stipulations herein contained to extend to and bind as well the principal hereto, as the heirs, executors, administrators, successors and assigns of the respective parties hereto. Seal William A. Curless Tuxill Realty Co. Tuxill President Bayside Homes Co., Inc. By F. A. Burdett, Pres. Seal C. L. Fellows for self and associates COPY

OFFICERS CHESTER D. ADAMS, President R. D. NORWOOD, Vice President CHAS. Y. BEAN, Secretary JAMES J. O'BRIEN, Treasurer ERLE M. McGUFFEY, Attorney PHONE ASHLAND 944 DIRECTORS Tstate Building & Toan Association CHESTER D. ADAMS
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JAMES J. O'BRIEN
DAVID P. EASTIN
BRLE M. McGUFFEY
CHAS. Y. BEAN
DR. R. M. ARMSTRONG
GEO. HOSKINS CHEAPSIDE AND SHORT STREET Lexington, Kentucky March 8, 1934. Mr. Hart G. Foster, Eminence, Ky. Dear Sir:-Please bear in mind the adjourned meeting of the Board of Directors of this Association which is to meet on Friday afternoon at 4 o'clock at the office of the Association, #131 Cheapside. As you will appreciate, a matter of considerable importance will be up for final decision and your presence is most urgently requested, Very truly yours, geretar

The Manufacture of "Olympic" and Cement (By Wet Process)



Balfour, Guthrie & Co.

General Sales Agents
Central Building, Seattle

Offices Also at
Portland Tacoma San Francisco
Los Angeles Vancouver, B. C.

Dealers in All Other Classes of Building Material

Foreword

PORTLAND CEMENT has assumed such important proportions in all classes of building and construction work in the past decade that some particulars regarding what is now conceded to be the most up-to-date method of manufacture will doubtless be of interest to architects, engineers, and contractors.

In these pages is given a complete description of the wet process of manufacture of "Olympic" Portland Cement at Bellingham, Wash., as well as some information as to the quality of the cement produced since the commencement of manufacturing operations last May.

This wet process was originated in Europe about ten years ago, and since that time has been developed to a high state of perfection and economy, with the result that it is now largely in use throughout that Continent. It is only within the last two years that it has been introduced in this Country, and, while parts of the wet process installation have recently been added by one or two factories in the United States and Canada, the Olympic Portland Cement Co., Ltd., has the first plant on this Continent which has been wholly built for the wet process of manufacture from hard raw materials.

Process of Manufacture of "Olympic" Portland Cement

1

Four raw materials are used in and for the manufacture of Olympic Portland Cement, namely: Limestone, clay, water and gypsum.

The Stone crushed to 1-inch cubes and smaller, is brought from the quarries in large steel hopper cars and dumped into the monitor of the stone storage building. This building has a capacity of 9,000 tons of limestone. The stone is then discharged through hoppers to a belt conveyor, which in turn discharges to a Link belt conveyor and thence to the raw mill bins.

The Clay is unloaded from cars by an electric crane which distributes the clay in the clay storage, and also feeds it to the wash mill hoppers.

The Water is metered into the clay at the wash mill basin, the two being thoroughly mixed so that it resembles a fine syrupy substance, whence it passes through an agitating basin, from which it is pumped up to the feeder at the outlet of the raw mill bins.

Grinding

At this point the stone and clay, in the ratio of about 3¾ to one, with approximately 34% of water added, all meet and are ground together in two No. 85 Smidth kominuters charged with steel balls.

Screening

After this the ground mixture is screened through two Trix machines and the part that is fine enough to pass on is sent forward to a No. E-20 all pebble tube mill, while the coarse particles are returned to the kominuter for further grinding. The No. E-20 tube mill forms the second stage of the grinding, and after passing through this mill the mixture is next ground in two No. 18 Cylpeb mills which finishes the 3-stage raw grinding.

Slurry

The raw material is now called slurry, and from the Cylpeb mills is discharged into the correcting basins, where the Chemist adjusts his mixture to the proper chemical condition for burning. This being arrived at, the slurry is carried by compressed air to the storage tanks under the kilns in the kiln building. Each of these tanks holds 2000 barrels. From these tanks it is pumped by two slow motion cylinder pumps up to the feeding devices at the intake end of the kilns.

Kilns

These kilns, two in number, are 170' 4" long by 9' and 10' diameter, and are equipped with all the most modern devices for the proper regulation of the burning of the clinker. The fuel for these kilns is crude oil which is forced into the kilns under air pressure, after having been heated to the proper temperature. The heating and pumping at the firing end of the kilns is carried out by means of a 150 H. P. boiler.



Burning The slurry enters the kilns carrying, as already stated, about 34% of water, and in its travels through the kilns is heated to incipient fusion.

Cooling

Leaving the kilns as clinker it passes down to the coolers, where it is cooled by means of cold air furnished by two large fans. This air, becoming heated, is in turn forced up through the hood of the kilns and enters the kilns with the compressed air and oil fuel. The hot air from the coolers, however, comes in too large quantities for perfect combustion in the kilns, so the surplus heat is used under the boiler of the oil heating apparatus. From the coolers the clinker is conveyed either to the clinker storage, which has a capacity of 170,000 barrels, or direct to the clinker, or finish mill.

Finishing In this mill there is a two-stage grinding through the same machines as in the raw end. First the proper quantity of Gypsum is added to the clinker to regulate the setting. Then the two together pass through the kominuters, and secondly through two combination pebble and cylpeb tube mills. It is then finished cement, and, after screening, is carried by conveyors to the silos for storage.

Silage

These silos, ten in number, have a capacity of 10,000 barrels each, giving a bulk storage of finished cement of 100,000 barrels. The cement is drawn from the bottom of the silos by machines that are known as ex-binners, thence delivered to a conveyor which carries it to the packing room.

Sacking In the packing room the cement is sacked by 4 Bates packing machines, and after the packing process is completed the filled bags are automatically dropped on to conveyors which deliver them into the cars for shipment from the works. From the car of raw material to the car of finished cement the product is never touched by hand; that is, as far as any actual manual labor is concerned.

Advantages

From the foregoing description it can readily be seen that there are one or two features which commend this wet process of manufacture as superior to that of others. Amongst these may be mentioned the following:

First: The elimination of practically all dust as compared with the troublesome drying of raw materials before grinding, which is an essential feature of the dry process.

Second: The elimination of heavy discharge and loss of fines through the kiln stacks.

Third: Faster and more economical grinding on the raw end, and the production of a smaller, softer clinker, which grinds more easily on the finish end.

Fourth: And most important, perfect control of the works at all stages on the raw end, insuring a uniform product, so that once a standard of quality is established it is more easily maintained.

Power used in operating the plant is entirely electric supplied by the Puget Sound Traction, Light & Power Co.

Shipping Facilities The "Olympic" plant has the distinction of being the only one in this country built on salt water with shipping facilities for ocean-going steamers.

The Wharf the Company has built into Bellingham Bay is 3,300 ft. long, and is of very substantial construction. Besides its water shipping facilities, the Company is fortunate in having direct connections with three Railroads, viz., the Chicago, Milwaukee & St. Paul, the Great Northern, and Northern Pacific.



The Factory has now been running for over five months with the result that "Olympic" has already demonstrated itself to be a first grade Portland Cement in every respect.

Analysis

Production averages between 1700 and 1800 barrels per day, and following is analysis made by Edwards & Lazell, Chemists and Cement Testers of Portland, Ore.:

Loss on Ignition	1.27
Silica and Insoluble Matter	21.14
Iron and Alumina	9.61
Calcium Oxide (Lime)	64.68
Magnesium Oxide (Magnesia)	1.31
Sulphuric Anhydride	1.61

Specific Gravity, 3.12.

99.62%

Tests

Physical Tests made by City Engineer's Office, Seattle, from various samples drawn during the period which the Plant has been in operation to date are as follows:

		Fineness Through	Mixed one part Cement to three parts Standard Ottawa Sand.			
		No. 200 Mesh Sieve.	1 day in air 7 days in water.	1 day in air and 27 days in water.		
Sample No.	1	94.4	430 lbs.	478 lbs.		
Sample No.		95.	442 "	487 "		
Sample No.		94.8	448 "	505 "		
Sample No.		93.	428 "	506 "		
Sample No.		94.	466 "	513 "		
Sample No.		93.6	438 "	522 "		
Sample No.		93.2	450 "	530 "		
Sample No.		94.4	462 "	515 "		
Sample No.		93.	470 "	535 "		
Sample No.		90.4	424 "	478 "		
Sample No.		90.6	424 "	476 "		
Sample No.	12	93.	442 "	501 "		
Sample No.	13	91.6	476 "	522 "		
Sample No.	14	91.4	420 "	560 "		
Sample No.		92.4	449 "	518 "		
Sample No.		91.7	446 "	495 "		
Sample No.		91.	486 "	505 "		
Average		92.8	447 lbs.	508 lbs.		

Initial Set: Average, 3 hours. Final, 6 hours.

" "Olympic" Portland Cement " "

Following are some tests made by the Portland City Engineer. Sampled June and August, 1913:

FINE	NESS.	SETTING	G TIME.	TENSILE	STRENGTH.
100	200			1 to 3	
Mesh.	Mesh.	Initial.	Final.	7 Days.	
97.8	90.2	4:34	7:09		449 515 450
				437	471 Average
98.	89.5	3:05	5:15	410 452 417	540 554 532
DEM	ADITO			426	542 Average

REMARKS: O. K. in all respects.

Summary

The high tensile strength shown by these tests can be attributed to the fineness which is steadily being maintained at from 90% to 92% on a No. 200 mesh sieve, and the proper regulation of the various ingredients to secure a uniform analysis as before stated. Consumers generally will appreciate the fine grinding by reason of its giving "Olympic" increased Sand carrying capacity, as well as making it more easily worked, in that it mixes better and quicker than a coarser ground cement.

Guarantee

"Olympic" is guaranteed to pass any standard specification or requirements, and it can also be purchased with a guarantee to pass the Auto Clave Test, if so required. The Auto Clave, as is well known, is the most severe Test to which Cement can be subjected.

Designers F. L. Smidth & Co., of New York, London, and Copenhagen, the well-known Designers and Builders of Cement Factories, were the Engineers in charge of construction.

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Olympic Portland Cement Co. Ltd. Seattle, Wash.

November, 1913

