

CITY OF PORTLAND, OREGON
GENERAL REQUIREMENTS FOR ALTERATION AND RENEW-
AL OF MUNICIPAL GARBAGE
INCINERATOR

April - 1927

NOTICE TO CONTRACTORS:

Sealed proposals for alterations and renewal of the present garbage incinerator in the City of Portland in accordance with the general requirements therefor will be received at the office of the Purchasing Agent of the City of Portland up to 10 o'clock A.M. _____ 1927.

Proposals must be on the blank form attached hereto with plans, specifications, and data enclosed therewith, and must be accompanied by a check payable to the order of the City of Portland, certified by a responsible bank for an amount equal to ten (10) per cent of the amount of the bid, to be forfeited as fixed and liquidated damages in case the bidder neglects or refuses to enter into a contract or neglects or refuses to provide a suitable bond for the faithful performance of said work in the event the contract is awarded to him.

The successful bidder will be required to furnish a bond to the amount of (fifty) 50 per cent of his bid to guarantee faithful performance of the contract in conformity with the general requirements, plans and specifications. No payments will be made the City of Portland for the construction until after a satisfactory test shall have been performed to show conclusively that all guarantees of the bidder and contractor shall have been fully met.

The contract for the construction will be awarded pursuant to the City's general requirements as supplemented by the detailed plans and specifications submitted, with such modifications as may be required, and, further, pursuant to the Charter and Ordinances of the City of Portland. The right is reserved to reject any or all bids.

INSTRUCTIONS TO BIDDERS:

Bids, shall cover the tearing out and removal of the existing furnaces and miscellaneous equipment and the installation of a complete incinerator plant, of 150 tons per day capacity within the present building and conforming to its general plan, especially in regard to the dumping floor, elevated roadway, entrance, stack, and exit for dump cars.

When a complete incinerator is spoken of, it is intended to include not only the furnace but all necessary accessories such as combustion chambers, settling chambers, stacks, runways, dumping floors, chutes, connections to sewer, pumps, forced drafts, preheaters, and any and all other features which would make a complete plant ready for operation upon completion.

The furnace shall be constructed in convenient units to give the total required daily capacity and in a manner to permit independent operation of each unit.

Bids must be prepared by filling out each and every blank on the attached proposal form. Failure to give desired information or stipulations running contrary to the City's general requirements may be considered as irregularities. The bidder shall enclose with his bid dimensioned plans show-

ing the general features of construction and operation. After the award of the contract these are to be supplemented by complete detailed working drawings. The bidder shall also enclose with his bid complete descriptive specifications, supplementary to the City's general requirements and setting forth in detail the material to be used, the construction and the operation of the plant.

Each bidder shall submit with his bid a list of municipal plants or furnaces, now in operation, such as contemplated in this installation, as evidence of experience and practicability of his type of plant; and shall furnish references, and if available costs and operating data on similar existing plants.

Attention is particularly directed to the various guarantees which are required, the methods of conducting the test, and the provisions for acceptance of the plant at a reduced price.

MATERIAL TO BE HANDLED:

The incinerator must be so constructed that the furnace will handle all kinds of waste which the City may desire to dispose of, such as garbage, wood and paper refuse, stable refuse, canned fruit and vegetables, dead animals, street sweepings, fixh offal, market and fruit waste, trimmings of lawns and trees and other refuse in the average proportions as collected and delivered to the incinerator from day to day. It is the practice and intention of the City to provide for the segregation of incombustible refuse, such as metals, dirt,

broken bricks, plaster and building materials and the deliveries at the dumping floor of the incinerator shall contain the least possible quantities of incombustible materials. The presence of small quantities of incombustibles such as tin cans and broken glass or crockery in the refuse delivered to the incinerator shall not be ground for exception or claim on the part of the Contractor during the testing periods, but Contractor may if he wishes to do so, pick out any objectionable quantity of incombustible matter, and after he has weighed the same, credit will be given for such amount weighed, on the total weight of refuse delivered and burned during the period.

CAPACITY:

The incinerator shall have a capacity for complete combustion and incineration to a clean odorless mineral ash, containing not over one (1) percent of organic material, of one hundred and fifty (150) tons of mixed garbage and refuse as above described within a period of 24 hours. The plant shall be arranged to receive the total daily capacity direct from the collection vehicles within a period of 12 hours and to provide storage for the surplus accumulated within the delivery period.

The plant, when operated at its maximum rated capacity, shall cause no nuisance for the escape of obnoxious odors or gases from either the building or the stack.

DISPOSAL OF OLD MATERIAL:

Any building material, bricks, castings or steel work, that may be deemed suitable by the engineer for the erection or repairs, reconstruction or replacements on the incinerator proposed, will be considered as the property of the contractor. Any new brick now on hand or available at the incinerator shall remain the property of the City. Waste

materials shall be removed from the premises and may be disposed of at the City dump.

PLANT DETAILS:

1. Receiving Floor: The receiving or dumping floor shall be laid out for the convenient receiving, weighting, unloading and dispatch of collection vehicles. Provision must be made, on the receiving floor or elsewhere, for the storage of the surplus received during the delivery period. The hoppers on the receiving floor must be so designed and constructed that the openings will allow the dumping of large loads directly onto the charging floor and into the furnace. Provision must be made for the dumping of large animals directly into the furnace or the combustion chamber from the vehicle without the need of any mutilation. The hopper doors should operate automatically in order that they may open when the material is dumped directly from the charging floor and close immediately after the dumping has ceased, or doors may be opened by an automatic device approved by the City Engineer.

The design of the incinerator and arrangement of drafts must be of such a character that the draft from the receiving floor will be down through the hopper-doors in order to prevent smoke or gases from escaping while the incinerator is being charged.

Provision must be made for the unloading of wastes that are of a combustible nature, such as wood, fuel, barrel staves, slab wood, etc., from the dumping floor to a point in the firing room with easy accessibility.

Floor drains shall be provided on all floors, in order that the same may be kept clean, and the drains shall be arranged to prevent waste or drainage from getting into furnaces, refuse storage spaces or ash pits. The city will furnish a sewer or drain outlet at the outside walls of the building, but the Contractor must make connections thereto.

2. Lining of Furnace: The furnace should have a lining of best grade Walsh fire brick or its equivalent, which will permit relining without any interference with the main casing of the furnace, or should be so designed as to require no fire brick or block lining. All fire brick work must be laid with the closest possible joints or dipped and hammered joints with a calcined fire clay made of the same material of which the fire brick are made. The proportions will be 20% pulverized fire brick, and 80% pure clay, with not more than 1-1/4% of hydrated lime. The fire clay shall be slacked or wetted at least three days before it is used and shall be used as a thin paste and not a mortar. The design should provide protection from the cold air entering the furnaces which will cause the brick or blocks to deteriorate when refuse is dumped.

3. Burning Garbage: The process of incineration must be so conducted that practically no dust, smoke or gases will escape from the furnace into the building from any openings while charging, stoking, firing or operating under a forced draft. The temperature in operating the incinerator should not be materially affected by opening charging doors, stoking, dumping grates or

cleaning ash pits and should at all times be sufficient to destroy any and all obnoxious gases or materials. In burning the garbage or refuse, the moisture should be evaporated by the waste heat as far as possible before any attempt is made to incinerate. The design of the incinerator should be such as to avoid the danger of garbage or refuse packing in some portion of the drying hearth or burning chamber, thereby tending to reduce the necessary temperature for complete combustion and causing smoke and odors. All garbage and refuse should be easily accessible to the heat developed in the furnace. It is desired if possible to obtain an incinerating plant that will destroy the garbage and refuse without the assistance of commercial fuel.

4. Ash Handling System. In each unit shall be installed a heavy section removable dumping grate; said grate to be dumped by means of an easily operated ratchet handle or similar device at a point on the side of the furnace. Each unit shall have its ash-pit separate from the adjoining ash-pit and air supply.

The present ash tunnel and ash cars may be used for removal of ashes. At least two cleanout doors for the settling chamber and flues shall be provided at points easily accessible so that the ashes and dust may be removed in the most economical manner possible for the type of furnace bid upon.

5. Operation. The design and arrangement of the whole plant shall be such that the entire operation, from the receipt of the garbage and refuse at the dumping floor to the emptying of the ash-pits, may be done in a sanitary, economical and efficient manner, and that stoking may be reduced to a minimum. The operating floor shall be free from smoke and dust at all times.

6. Drafts: The incinerator is to be equipped with forced draft and with a pre-heating device, so that all forced draft air entering the furnace will be heated to not less than 300 degrees Fahrenheit. A by-pass should be provided with steel or iron pre-heaters.

7. Pyrometers. Provision shall be made for the installation of pyrometers in each unit.

8. Painting. All steel work, castings and other metal work not exposed to fire or high temperature gases must be painted with at least two coats of first quality metal paint.

GUARANTEES:

The bidder is required to guarantee the construction and operation of the plant upon the following points:

1. That the receiving and charging floor shall have ample and convenient capacity for receiving 150 tons of refuse delivered each day during a period of 12 hours, and for storing such part of the refuse delivered as will not have been charged into the incinerator during the delivery period, the remainder or stored quantity to be charged into the furnaces and burned within the remaining portion of the 24 hours.

2. That the incinerator shall consume 150 tons of mixed garbage and refuse within a period of 24 hours and that it will be incinerated to a clear, odorless mineral ash containing not over one (1) per cent of organic or unburned material.

3. That if commercial fuel be required to support combustion, the stated maximum number of pounds per ton of garbage or refuse shall not be exceeded.

4. That when the plant is operated at its rated capacity, it shall create or cause no nuisance by the escape of obnoxious odors, gases, dust or dark colored smoke from either the building or the chimney.

5. That the stated cost of operation of the incinerator, per ton of garbage and refuse charged into the furnace shall not be exceeded. Thus "cost of operation" is defined to be and shall be understood to be the cost of superintendence, labor, power, water at regular City rates, fuel, lubricants, supplies, repairs and all other operation and maintenance costs as shown by the regular and orderly operation of the plant when running at rated capacity, and not as shown by any special, short time test run. It is understood that the operating test which shall be used as a basis for acceptance of the plant shall cover a period of 60 days. Interest on cost of installation and amortization of the same shall not be included in "cost of operation".

6. The bidder shall guarantee to protect the City against all litigation in connection with the use of patented devices in the construction of the plant.

7. The bidder shall guarantee to replace immediately, without cost to the City, any parts failing because of faulty material or workmanship during a period of one year following the acceptance of the completed plant by the City Council.

TESTS AND PAYMENTS:

Acceptance of the incinerator shall be subject to a sixty (60) day test, conducted at the expense of the City, but under the direction of the contractor. Garbage and refuse for the test shall be received as brought in by collectors in

the regular course of the work, and shall be of the character hereinbefore specified, but to give a definite basis for the test, a proportion of 65% by weight of garbage and 35% by weight of rubbish shall be maintained as nearly as is practicable. Since the maximum capacity of the plant is only about one-half the total production of garbage and refuse by the City, it will be possible to maintain a delivery of approximately the designed capacity through the entire test period. Water may be added to stored garbage in order to extinguish fires caused by explosion or spontaneous combustion, but otherwise water will not be used to wet the garbage or refuse.

The "cost of operation" shall be as heretofore defined. If the cost of operation per ton of garbage consumed for the test period shall be found to be within the contractor's guarantee of cost per ton incinerated, the City Engineer shall so certify to the Council and the Contractor shall be paid in full.

If the cost per ton exceeds such guarantee, the City may refuse to receive the incinerator, or may, by the advice of the City Engineer, accept the plant at a reduced price, which shall be determined as follows:

The excess cost of operation per year shall be calculated on the basis of the rated capacity of the plant for 300 days per year. The "present justifiable expenditure" shall be computed which will, on a 6% interest basis, cover this annual excess cost for a period of 8 years, and the amount so found shall be deducted from the price bid by the Contractor and the remainder paid to him in full settlement of his contract.

It is recognized that the character of the garbage and refuse and the conditions under which they are received vary with the seasons and the weather, and the test must be made in accordance with current conditions; provided, that if the incinerator fails to pass the test, the City shall at the request of the contractor, take over and operate the plant, without payment therefor, until a second and final test shall have been made, which test shall be made at such time as the City may select, but shall be completed within six months of the completion of the first test. Acceptance and payment shall be in accordance with the final test.

No progress or partial payments shall be made for work done, but the Contractor shall be paid promptly, in full, upon the completion of a satisfactory test, showing that all guarantees have been fully met.

CITY OF PORTLAND, OREGON
PROPOSAL
FOR
ALTERATION AND RENEWAL
OF
MUNICIPAL GARBAGE INCINERATOR

TO THE HONORABLE MAYOR AND CITY COUNCIL,
PORTLAND, OREGON.

Gentlemen:

The undersigned bidder declares that he has carefully examined the General Requirements for the construction of the proposed garbage incinerator; that he has made a thorough examination of the existing incinerator plant and is familiar with the extent and character of the work involved, and that if this proposal is accepted, he will contract with the City of Portland in a form of Contract embodying the General Requirements and this Proposal; and will, to the extent of his bid, provide the necessary machinery, tools, apparatus, and other means of construction, and will furnish all material and labor necessary to complete the work in the manner specified, and according to the rulings and interpretations of the City Engineer.

NOTE: The bidder must fill completely each and every of the following blanks, and must furnish the plans and detailed specifications called for, which must be supplementary to but not in conflict with the City's General Requirements.

BID PRICE

For the tearing out and removal of the existing furnaces and miscellaneous equipment, the installation of a complete incinerator plant, and the supervision of operation through the test periods, in conformity to the General Requirements and the Plans and Specifications, the lump sum price of _____
DOLLARS (\$ _____)

CONSTRUCTION

Type of furnace proposed _____
_____ units of _____ tons per 24 hours
capacity each. Storage will be provided for _____ tons of mixed
garbage and refuse, the storage space to be located as follows:

Incinerators of the same type have been built and are in operation elsewhere in _____ places, as per attached list, which gives location, capacity and names of officials of whom inquiry may be made.

Plans of the proposed plant, consisting of _____
sheets, numbered as follows: _____

are enclosed with this bid. These plans show completely, with dimensions, the type of construction proposed. Upon the award of the contract these plans shall be supplemented by detailed construction drawings.

Specifications for the proposed plant consisting of _____ pages are enclosed herewith. These Specifications are in conformity with and supplementary to the City's General Requirements and it is understood that in case of doubt the latter shall govern.

Supplementary data, catalogs, pictures, etc., are enclosed as follows:

TIME OF COMPLETION

We will require shutting down the present plant for the purpose of reconstruction within _____ days after the execution of the contract, and will complete the work in all particulars, ready for starting the test run within _____ days after the execution of the contract.

GUARANTEES

We fully and without qualification accept and furnish the guarantees of storage capacity, incineration capacity, fuel consumption, efficiency, cost of operation and maintenance, patent rights, and material and workmanship as set forth in the General Requirements and as follows:

For a mixture of approximately 65% garbage and 35% refuse as provided for in the test run, the requirement of additional commercial fuel, said fuel to be _____, shall not exceed _____ pounds per ton of garbage and refuse consumed.

The "cost of operation", as defined in the General Requirements, when handling an average mixture of approximately 65% garbage and 35% refuse at the rated capacity of 150 tons per 24 hours shall not exceed the sum of _____ Dollars (\$_____).

per ton, made up approximately as follows:

Cost per ton

Superintendent, rate \$ _____ per 8 hour day.....\$ _____

Foreman _____ man hours rate \$ _____ per 8 hour day.....\$ _____

Fireman _____ man hours rate \$ _____ per 8 hour day.....\$ _____

Laborers _____ man hours rate \$ _____ per 8 hour day.....\$ _____

Power _____ K.W.H. per ton, computed at an
average rate of \$0.01 per K.W.H....\$ _____

Water _____ Cubic feet per ton, computed
at the rate of \$0.07½ per
100 cubic feet.....\$ _____

Commercial fuel, at \$ _____, per _____ ..\$ _____

Lubricants and supplies, as follows:

_____ \$ _____

Maintenance and repairs, as follows:

_____ \$ _____

Other costs, as follows:

Total, per ton.....\$ _____

CERTIFIED CHECK AND BOND

Accompanying this proposal is certified check on _____

for the sum of _____ DOLLARS (\$ _____)

according to the conditions of the Notice to Contractors and Instructions to Bidders.

If this proposal shall be accepted by the City of Portland and the undersigned shall fail to execute a satisfactory contract and furnish bond, within ten (10) days, (Sundays excepted) from the date of notification, then the City of Portland may, at its option, determine that the undersigned has abandoned the contract and thereupon this Proposal shall be null and void, and the cash or certified check accompanying this proposal shall be forfeited to and become the property of the City of Portland, as compensation for expenses and as liquidated damages; otherwise the certified check accompanying this proposal shall be returned to the undersigned.

If awarded the Contract, we will furnish bond in the amount of 50% of the contract, as provided in the General Requirements, said bond to be furnished by

of _____

Payment

It is understood that no progress or partial payments shall be made for work done, but the contractor shall be paid promptly, in full, upon completion of a satisfactory test showing that all guarantees have been fully met.