

Edmonton Bulletin.

EDMONTON BULLETIN MONDAY, DECEMBER 3, 1906

NUMBER 108.

Do Not Forget

Some of these in your next order. Just opened up. Coconut fingers, lady fingers, Abernethy Jam Jams, Fig Bar, Fig Sandwich, Raisin Cookies, Honey Fingers, etc.

GRAEPEY & LESSARD

VOL. IV, Semi-Weekly.

ELECTRIC AND WATER PLANTS MUST BE ENLARGED AT ONCE

Engineer Places Report Before Council Showing That Both Are Already Taxed Beyond Proper Capacity

(Saturday's Daily)
Two reports placed before the city council last night by the city engineer indicated that the city already working to the water and light services and something on a much larger scale than anything heretofore contemplated must be undertaken at once if the city is to avoid a water famine next year, with its attendant possibilities of devastation by fire. And if the electric light plant is to meet the demands that the demand will overtake the supply before the new plant can be installed. The amount of light used has doubled within the past year and there is every reason to believe that it will more than double again within the next year. The plant already working to its limit on Saturday night. On the 1st of January the city's contract with Strathcona will run out, which the city will have a surplus of power for a few months, but the surplus will be only brief.

On the water question, the city has long since passed the safe limit where the pumps represented a duplicate plant. Should the large pump break down at any time the small pump could not supply the city and situation in case of fire would be dangerous if not disastrous. To help tide over this contingency until such time as the city may install the new plant, the council last night authorized the commissioners to make an arrangement with Strathcona to connect by a pipe line laid under the river the Edmonton system with the pumping station across the river. The arrangement, of course would be reciprocal, each town helping to protect the other, the cost would be \$6,000.

The reports of the engineer were favorably considered and referred back for further consideration to the council with the specifications of particulars regarding the proposed water plant such as length of main, level, pressure at different points on the city's system. The location of the new water works, as proposed by the city engineer, is almost due south of the street, on the south west corner of the south east quarter of sec. 36, range 25, township 52, and call for 16 inch mains one and one half miles long. The following are the reports in full:

The following report is intended to show the present capacity and condition of the Electric Light Station and also the necessity for extending the same in the near future.
The present plant has a capacity of 675 KW in two units of 450 and 225 KW each. There is at present a maximum load of 660 KW, which is more than a load for either machines separately and if either machine experienced an accident, the city would have to run on reduced power. The boiler plant consists of a total 1200 horse power of which 300 horse power is not yet in operation. These boilers have to supply power for the combined water pumping and electric light plants and although the boiler plant exceeds in horse power the rated power of the electric light and pumping engines, it is necessary that it should in order that there may be a spare boiler to allow for cleaning without menacing the operation plant.

THE STACK.
The stack has a capacity of 375 h. p., and as it is at present required to handle the smoke of 1000 horse power it has been necessary to supplement it with a mechanical blower, which will enable the plant to get through this winter without any great inconvenience. From the above it will be seen that in order to be ready for next winter there must be an extension to the plant.

It might be said that the additions had been ready for this present winter. I do not, however, consider that it was necessary as there is a certain allowable risk that must be assumed in the matter, and the plant will be in an overloaded condition for a period of three months only and then only for a part of each twenty-four hours. The inconvenience, except under extreme conditions, will this winter be very slight and will amount possibly to nothing more than a shortage of the arc lighting.

The advantage of assuming this light additional risk has, this year especially, been great. Since June two very important features are being presented namely: The Electric Street Railway and possibly an electric pumping plant. These two conditions will influence to a large extent the magnitude of the proposed extension.

The following details that include the extensions and changes which I would suggest for the coming year and which will serve to increase the guarantee of light and power to an extent as is necessary where a large population depends on the continued operation of the system.

ENGINE AND ALTERNATOR.
The machinery should be either an engine direct connected to an alternator, such as we have at the present or a turbine driven alternator. The capacity of the alternator should be at least 900 KW or the nearest standard machine to this capacity. The engine or turbine horse power can be found by allowing 11-3 horse per K.W., thus a 900 KW machine would require a 1200 horse power engine or turbine.

The alternator should be 60 cycle, 3 phase, 240 volts. Such a machine would work in proper synchronism with our present machines.

THE WATERWORKS REPORT.
Although this report has to deal particularly with the future water supply of Edmonton, it is necessary, in order that the questions arising may be intelligible to the board, that the present system should be explained.

The pumping of the water for the city is at present performed in two stages; first the raising of the water from the river level to the ground level, a height of 19 feet; second, the delivering of the water from the power house to the city level under domestic or fire pressure as the case may be. This necessitates two sets of pumping machinery, namely, the deep well pumping machinery, and the pressure pumping machinery.

The deep well pumps are placed in wells which are sunk below the low water level of the river, and which are connected with the river by a 12 inch in-take pipe which is laid in a tunnel. The water stands in these wells at the level of all tides of the river. The deep well pumps and in-take have a maximum capacity of 2000 imperial gallons per minute for the pump motors.

The capacity has been made possible by a particular method of connecting the deep well pumps. The pressure pumps have a maximum capacity of 1750 gallons per minute and can deliver this quantity against fire pressure of eighty pounds per square inch in the city.

REASONS FOR CHANGE.
It is necessary that the city of Edmonton immediately undertake an improving and enlarging of the capacity of the water supply system.

The population is rapidly increasing and there is not the least doubt but that it will double in the next two years. The amount of water required will also double and the amount of property to be protected in case of fire will be very greatly increased. Therefore, in order to be prepared for the coming demands, preparations should be made at once.

It is admitted that the location of the present plant is not suitable for the furnishing of water for a city of the proportions to which Edmonton is destined, on account of the river flowing through a part of the city that will soon be thickly populated.

There exists a feeling and good reason that the water supply of the city should be free from any suspicion of contamination.

The map which accompanies the report shows the location of the pumping plant where the water is taken from the river at a point which is at present free from all contamination and will be until the city reaches very large proportions.

In the water supplies of cities there are two distinct systems in use, the gravity pressure system, and second, the direct pressure system.

The gravity pressure system is by far the most desirable under the conditions which admit of its adoption, and a city having a natural elevation offering a location for a reservoir, has a very great advantage with regard to water supply. The gravity system, however, is not applicable to Edmonton on account of the unevenness of the land surface and on account of the great distance to which the river would have to be tapped in order to give a domestic pressure of 70 lbs per square inch at city level, and a gravity supply of less pressure than this should not be considered. The river would have to be tapped at a point where the surface was at least 100 feet higher than it is opposite the city.

The gravity pressure system, when procured by elevated tanks and pipes, is expensive and unsatisfactory and not applicable to large cities.

If therefore some that, on the natural conditions that surround Edmonton, the city is committed to the direct pressure system.

The machinery must be sufficiently intricate to insure the city at all times against a shut-down, which duplication is not so necessary with the gravity supply.

The system with which this report deals is a direct pressure system, the pumps will be located at the point shown on the map.

The pumping machinery of the proposed plant will be entirely electrically driven. The electrical energy will be procured from the city's central station. One of the advantages of this will be the smaller staff that will be required for operation and the economy always experienced in generating power in large quantities. The machinery should at least consist of two 3,000,000 gallon turbine pumps direct connected to alternating current motors.

These pumps should be designed to give this supply against a head of 150 lbs. per square inch at the pumps. This would be equal to 70 lbs. per square inch (domestic) in the city. Only one of the pumps would be required at first. On account of this system being direct pressure, the two are necessary, and as soon as the demands on the system require the two to operate at once, then a third should be installed.

CONDENSER AND AIR PUMP.—On account of the principles governing the operation of turbine pumps, an auxiliary, once-through pump would have to be installed in order to raise the pressure the amount by which fire pressure exceeds the domestic pressure. Thus when a fire takes place the auxiliary pump is started which will raise the pressure to the required amount. This auxiliary pump is called a "booster." This method of getting fire pressure would serve the needs of the city until some six story buildings were to be protected, at which time, no doubt Edmonton will require particularly to this engine or turbine but the remainder of the plant will also be applicable to it.

STACK.—A new stack will have to be built having a capacity with natural and induced draft of 2500 H.P.

TRANSMISSION LINE.—In the estimate it will be necessary to make provision for increasing the capacity of the transmission lines.

BOILER HOUSE ROOF.—The boiler house roof will have to be reconstructed on account of the wooden frames over the boiler having become warped and brittle with the action of

the heat, and when this is being done the question of elevated coal bins with coal conveyors could be considered, the roof trusses and stack might be reinforced and possibly to coal bins as well.

Every large central station such as this is likely to become should have a duplicate steam header in order that this very important part of the piping system should be guaranteed against failure, which failure is not only exceedingly dangerous but causes the plant to be more or less damaged and shut down for a considerable period of time.

In placing before you this report of the wants of the Central Station, I will respectfully urge that action be taken at once. The operation this winter can be carried on without serious difficulty, but the extension of the plant must be ready for load by September 1907, or the risk will be insupportably increased. If tenders are at once called for the machinery that you choose will be ready for operation in time.

I would suggest that the question of a turbine alternator be carefully considered or the success of the turbine recommends it to all purchasers. It will be seen that this is a very radical proposal but by far the most economical they are fully the equal of the engine. The installation of turbine would require no extension of the engine room which would be necessary if reciprocating engines were purchased. There are several of these machines in Winnipeg and Fort Wil-

lam and a personal inspection of these machines would at this time be of value to the city. No further extension of the boiler room will be necessary for the boilers above suggested.

If the street railway becomes a fact this machine or any of the machines in the station can furnish current for its operation, the railway will, therefore, be chargeable with a portion of the cost. In order to further show reason for the extension it may be stated that the demands on the station have almost doubled since last year and there is no doubt but that another year will see the output doubled again as the population is rapidly increasing. There is also a much larger percentage of the people using electric light.

Details and specifications can be drawn up at once and forwarded to the various builders in order that the necessary data as regards price, delivery, etc., may be in hand so that definite action can be taken at an early date.

If this report is considered in connection with the proposed new pumping station it will be seen that the tendency of both is to centralise the power generating part of the system thereby allowing power and light to be produced at a minimum cost.

Yours,
P. McNAUGHTON, B.Sc.

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HALLIER & ALDRIDGE,
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London, Dec. 1.—Oxford and Cambridge boat club will decline to row at the Jamestown exposition next year.

If the roof—should have good attention. If roofs are made of shingles see to it they are sound and knot free. Don't need a microscope if we furnish the material, for the reason that our shingles as with all other lumber in reaching the highest standard at the lowest reasonable price. We want your business, and fill orders to suit varied requirements.

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A. WILLIAMSON TAYLOR,
Messrs W. S. Weeks & Co. Real Estate

Mr. Taylor is the son of an Anglican clergyman, Rev. Jeremy Taylor, late Vicar of South Shields, Durham, England, a direct descendant of Jeremy Taylor, the Ecclesiastical Bishop of Down.

Mr. Taylor received his education at the Grammar school, Newcastle-on-Tyne, and at Durham university. Mr. Taylor is an old timer in Western

Canada, having come there in 1882, when he joined the Indian Department service, and was associated with it for ten years. He has seen much of the development of the West, and has been an active participant in its progress. Mr. Taylor is a member of the W. S. Weeks' Co. financial brokers of this city. Mr. Taylor has a leaning towards Conservative principles.

as follows, after making a liberal allowance for the usual difficulties which cannot be foreseen:
3,000,000 gallon turbine pumps with motors and auxiliary \$22,000 00
Stack excavation and intake, including filler 10,000 00
Duplicate 18 inch pipe line 70,000 00
Total \$112,000 00

The above prices are liberal approximations. The machinery being the only item in which there is any uncertainty the other figures however, are perfectly safe.

BOILERS.—600 H.P. of additional boilers should be purchased in order that there may be a sufficient surplus for all purposes. These boilers should be fitted with mechanical stokers and superheaters, and if a turbine is purchased should be capable of carrying a working pressure of 2 1/2 lbs per square inch.

CONDENSER AND AIR PUMP.—The condenser and air pump must have sufficient capacity to handle the steam from the unit when working at 50 per cent over load. This condenser and air pump will belong particularly to this engine or turbine but the remainder of the plant will also be applicable to it.

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