

Four Dynamos of capacity named would be sufficient for present requirements, but experience has proved the necessity of a spare generator.

With the increase of the number of lights to 700, another Dynamo will be required. It is advisable to postpone the purchase of such machine until absolutely necessary on account of constant improvements being made in the manufacture of electrical machinery.

ARC LAMPS.—Five hundred (500) Double Carbon Arc Lamps of the Clutch type, each of 2000 candle power, with globes, hangers, and automatic cut-outs, fitted for $\frac{3}{8}$ in. carbons. These lamps will burn two nights in succession, thus requiring to be trimmed but every other day.

LAMP CIRCUITS.—The line of No. 6, B. and S., weather proof copper wire, to be divided into 9 circuits of about 55 lamps each, thus allowing for additional lamps for each circuit.

Circuits to be so arranged as to prevent as far as possible the centre of the City being in total darkness in case of accident to any circuit or dynamo.

Also provision being made for certain lamps to be lit at all times, in case it is thought advisable to run on a moonlight schedule.

It is evident a much better distribution of lights can be made than at present. Many lamps are so placed that the radiating power is to a degree lost either by their being too high, or hung without proper allowance being made for the shadow cast by trees. These lamps can be so stationed as to give the full candle power of the light generated.

In considering the advisability of substituting a number of 1200 candle power for the present 2000 candle power lamps, the location of such it is impossible to determine without the opinion of your Committee to decide and sanction any changes. Therefore, while not naming the lamps to be changed, the report shows the comparative cost of installing and operating 1200 candle power and 2000 candle power lamps on one circuit.

MAINTENANCE OF PLANT.

In locating the Plant on the land adjoining the Ferguson Ave. Sewage Interception Works, a saving of labor would in all probability be effected by the utilization of the present engineer and his men, who, with the addition of an assistant engineer would be sufficient to operate both steam plants.

FUEL.—The estimated cost of coal required for operating is of considerable importance, fuel being the principal operating expense. With the latest type of Compound Condensing Engines, fitted with economizers, etc., a great saving of fuel can undoubtedly be effected. The amount of coal required is variously estimated from 5 lbs per horse power per hour for a simple Non-Condensing Engine to 1.765 lbs per horse power per hour for a Triple Compound Condensing Engine.

Taking 4 lbs. per horse power per hour as a fair estimate, assuming the efficiency of Engines and Generators to be 90%, and efficiency of line to average 93%, one pound of coal will produce 140.49 Watt hours. The estimate provides for four (4) generators running ten hours per day each 9.6 Amperes, 6250 volts, or a total output of 2,400,000 Watt hours per day.

Estimating 140.49 Watt hours per pound of coal, the amount consumed daily would be 17,083 lbs., or an annual consumption of about 3116 tons.