

CEMENT CONCRETE WALKS.

The City Engineer of Toronto in his last annual report says:

In 1905 the high water mark was reached in the construction of concrete sidewalks, 37½ miles having been laid. This is an increase of 6.442 miles, or 20 per cent. over the mileage laid in 1904, and 2.604 miles or 8 per cent. more than was laid in 1903, which, until last year, held the record for the greatest amount of work done under the supervision of this Department.

Only one brick sidewalk was constructed, with a mileage of .037 miles. The total length of permanent sidewalks constructed during 1905, was 37,537 miles and the total length in the City is now 187,206 miles.

The question of coloring the surface of concrete walks was investigated, and walks on both sides of Sheridan avenue, north of Dundas street, were colored red and grey, respectively, to test the result. 8¼ pounds of Venetian red to one barrel of cement, and one pound of carbon black to one barrel of cement was used for the purpose, and these quantities were found to give a pleasing tint. It is feared, however, that the color is not permanent, a perceptible fading being already noticeable.

In constructing concrete sidewalks, a length of 80,958 lineal feet of concrete curb was built in place during the year.

During the year 1905, 279 concrete sidewalks were constructed, of which 95 were done by day labor. Of these 5 were ordered by council to be done by day labor, without the formality of calling for tenders. Four were taken from contractors on account of their dilatory methods of work, and the balance, 86 in number, were awarded to the City Engineer, he being the lowest tenderer. On 18 other walks the City Engineer's tender was also found to be lowest, but at the request of the next lowest tenderer he was allowed to do the work, under the supervision of this department, and at the City Engineer's figures, thus effecting a substantial saving to the property owners. The walks constructed under this system aggregate 9.00 miles, as compared with 3.07 miles as constructed in 1904.

In estimating the gain or loss resulting from the day labor system, if we take the lowest local contractor's tender as a basis of comparison on the walks for which tenders were invited, we find an actual gain of \$5,356.85 on an actual expenditure of \$34,699.03. The total cost of sidewalks constructed under the day labor system during 1905, exclusive of interest on money, was \$42,874.91, as compared with \$12,322.96 in 1904. While the mileage increase by 2.93 times the saving effected increase by 5.09 times when compared with 1904.

NOTES.

The difficulty of surveying deep bore holes has been overcome by photography in South Africa, an apparatus devised by William Helme, of Johannesburg, having given accurate results in that not only the vertical drift of the hole, but also the position of the magnetic needle is recorded. The apparatus consists of a long brass cylinder which contains a small watch, a dry battery, two miniature electric lamps operating in connection with a compass supported on gimbal bearings, and a suspended plumb bob; at a predetermined time the watch makes a contact lighting the lamps, by means of which the positions of the plumb bob and the magnetic needle are photographed on a small disc of sensitized paper.

An ozone plant for water purification has recently been installed at Saint-Maur, near Paris. The water treated is taken from the river Marne and is usually clarified by deposition or filtering through sand, and is then driven through a sterilizer at a uniform rate of flow, in which air, after being impregnated with ozone, is brought into contact with it. The ozone is generated on the system of Frise, the electrified air being cooled to below 25 per cent., which is the temperature most favorable for ozone production. The electric current supply for the ozone production is furnished by an alternating current generator and transformers designed to deliver

40,000 volts alternating, which is driven by the 45 h.p. engine that also operates the 33,000 gallon centrifugal pump handling the water. The results of the process have been very satisfactory, the amount of energy consumed in handling 22,000 gal. of water per hour amounting to 48 h.-p.

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