

# MUNICIPAL DEPARTMENT

## TO MUNICIPAL OFFICERS.

The CONTRACT RECORD is desirous of publishing, as far as possible, advance information regarding projected works of construction in all parts of Canada, such as sewerage and waterworks systems, railways, street pavements, public and private buildings, etc. Municipal officers would confer a favor upon the publisher by placing at our disposal particulars of such undertakings which are likely to be carried out in their vicinity, giving the name of the promoter, character of the work, and probable cost. Any information thus furnished will be greatly appreciated.

## CEMENT—MACADAM.

An experiment has been made with this new paving in Berlin. The paving is made by first putting down a bed of concrete, on which, when sufficiently hardened, the cement-macadam proper is spread. The latter consists of crushed stone, about the size of a walnut, and Portland cement, with very little sand, four flat shovels for three or four sacks of cement. It is prepared by putting the crushed stone on a platform together with the few shovels of sand. Then the mass is first mixed dry by shoveling, and then wet under the plentiful addition of water. Finally the mixture is thrown upon the concrete and tamped solid. As soon as this is done the surface is rubbed with a board, and the uneven places are filled with the cement mortar. By means of a roller a rifled surface is given to the paving. When finished, the macadam is covered with sand to prevent too rapid drying, and it thus remains from ten to fourteen days.

Although the cement-macadam has been subjected to traffic only three or four days, it has already been badly damaged where heavy freight is passing over it.

Aside from the wretched durability of the paving, it is not suited for the busy streets of Berlin, since it makes necessary a long delay for the purpose of drying the macadam. The short stretch on Invaliden street, a piece about 300 feet long, required about four weeks' time, including the time of hardening. Such a long-continued obstruction of traffic might be tolerated when there is an assurance that the pavement is really durable and where it need not be disturbed for some time. But where gas, water and compressed-air lines, as well as electric cables, require constant repairing, the replacement of the cement macadam would be found inconvenient and expensive, in addition to the poor durability,

A pavement which does not show any of these disadvantages is the brick pavement. Brick made from shale, properly

made, burned and annealed, gives a street pavement which is cheap, durable, needs little repairing, causes comparatively little friction, and is not noisy.—K. Duemmler, in the German Brick and Pottery Gazette.

## HOT WATER TEST FOR CEMENT.

Increasing attention has of late been given to the method of testing the soundness of cement by means of the hot water bath, and this system has much to recommend it, especially in cases in which it is important to ascertain speedily the character of any given sample of Portland. The principle which underlies this plan of testing is that moist heat facilitates and accelerates the induration of cement compounds, and, by the employment of boiling water, the setting process is hastened to such an extent that defects, which might take days, or even weeks, under ordinary circumstances to become manifest, are developed in the course of a few hours. Different observers have suggested somewhat varying methods of carrying out this hot water test, which is undoubtedly a powerful agent for the detection of latent imperfections in the composition or quality of cements of the Portland type. Mr. Margetts, who has used this mode of testing, states that no less than ten samples of cements obtained from various sources became more or less disintegrated by the boiling process; some of them being reduced to mud and losing all traces of cohesion. It has been asserted that forty-eight hours in the hot bath are equivalent to immersion for seven days in cold water, that is to say, that a briquette made of neat cement will show a corresponding amount of tensile strength after the above intervals respectively, or that, in the case of tests made with sand, a seven days' hot test is equivalent to a twenty-eight days' cold test; the percentage of difference of the tensile strengths in a good sample of cement being in both instances but trifling. In applying this test to specimens of neat cement, it is usual to make up small circular pats, about 3 inches in diameter, with just enough water to enable them to be smoothed out with the trowel to the thickness of about half an inch in the center, and a quarter of an inch at the edges. As soon as these pats become fairly firm or set, they are placed in water kept at a uniform temperature of about 180° F., or some prefer 212° F. for seven or eight days, after which

period, if the pat still remains firm and unaltered, the cement may be pronounced to be sound and of good quality, and capable of undergoing any of the ordinary engineering tests. If the water in the bath is raised to the boiling point, a much shorter period will suffice. If the tests are made with samples of cement and sand, however, the lower temperature should be employed. If used in conjunction with the ordinary tensile tests, this method should prove of especial importance to the cement manufacturer, who frequently, when making alterations in his material or mixtures, requires to form a speedy conclusion respecting the resultant cement.

Mr. Margetts, in the course of a discussion upon this subject at the Institution of Civil Engineers, in November, 1891, urged the value and importance of this test, and gave the following instance of its application to two cements, nearly identical in their composition, one of which stood the boiling process perfectly, while the second disintegrated after the expiration of three hours in water at 212 F.:

Composition.	No. 1.	No. 2.
Lime .....	60.67	60.47
Silica .....	24.86	24.93
Oxide of iron and alumina .....	12.82	12.42
Magnesia .....	0.63	0.58
Sulphuric anhydride .....	0.36	0.30
Carbonic anhydride .....	0.47	0.52
Alkalies .....	0.73	0.78
Total .....	100.00	100.00
Specific gravity .....	3.11	3.118

Tested with the sieve, No. 2 proved to be somewhat more finely ground than No. 1, and the average tensile strength of No. 1 after seven days (six days' immersion in cold water) was 496 lbs. per sq. inch. The same cement gave, after twenty-four hours in the air and forty-eight hours in the hot water bath, a tensile strength of 418 lbs. per sq. in. No. 2 cement, tested in the ordinary way at 7 days, had a tensile strength of 390 lbs. per sq. inch, but briquettes exposed for twenty-four hours to the air and then immersed in boiling water became disintegrated, as already stated, in three hours.—G. R. Redgrave.

After May next the law of the province of New Brunswick requires that all wagons fitted to haul loads of one ton and over shall have tires not less than four inches wide. A proclamation in the Royal Gazette gives notice to carriage-makers and others concerned to make preparation for the time when the law will come into force.

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