

MUNICIPAL DEPARTMENT

THE PHYSICAL QUALITIES OF BUILDING AND PAVING BRICKS.

A very extensive table of results of "Tests of Paving-Bricks," prepared by Mr. E. S. Fickes, of Steubenville, Ohio., who also made the tests, is printed in Engineering News. The amount of work represented in this table is large. Samples of bricks from no less than thirty-four widely separated localities in the United States are tabulated—often a considerable number of samples from the same locality; so that one hundred and one different samples are represented. For example, six samples of Canton, Ohio., seven from Cleveland, eleven from St. Louis, ten from Philadelphia, and four from New Cumberland, W. Va., are represented.

An exhaustive analysis of the tabulated results enables the following rules for paving bricks to be deduced.

"1. Paving bricks are best tested by their resistance to abrasion when tumbled, and they vary considerably in that respect, some losing nearly three times as much weight as others for a given amount of tumbling.

"2. Any brick which will stand tumbling well has ample crushing strength, rarely chipping under less than five thousand pounds per square inch, or crushing under less than ten thousand pounds. The crushing strength tends to vary with the resistance to abrasion, however, but more slowly and irregularly.

"3. The transverse strength also tends to vary with the resistance to abrasion, but more slowly and irregularly. Good paving brick should show a modulus of two thousand to two thousand five hundred under transverse load, but brick with small resistance to abrasion will often show high transverse strength, so that the test has only negative value.

"4. The quantity of water absorbed in twenty-four hours should be small, as an end in itself, but it is a very rude test of the quality of the bricks in other respects. The toughest bricks tend to show the least absorption, and any paving-brick absorbing much more than one per cent. of moisture in twenty-four hours is justly open to suspicion; but some of the best bricks will absorb more than thirteen per cent. of water, and some of the poorest bricks will absorb much less. All good paving-bricks absorb less than two per cent., which is greatly less than the best building bricks absorb."

For building bricks a different set of rules is deduced, although this has been a more difficult task than it was to draw conclusions applicable to paving-bricks, requiring a rearrangement of the tests in the order of ultimate crushing strength per square inch, and subdivision into

groups as follows: crushing strength—(A) 8,000 per square inch, and over; (B) 6,000 to 8,000; (C) 5,000 to 6,000; (D) under 5,000.

"1. The strength of building-brick, both transverse and crushing, varies in tolerably close inverse ratio with the quantity of water absorbed in twenty-four hours. The strongest bricks absorb least water.

"2. Good building-bricks absorb from six to twelve per cent. of water in twenty-four hours, and, with no greater absorption than twelve per cent., will ordinarily show from seven thousand to ten thousand or more pounds, per square inch, of ultimate crushing strength, and a transverse modulus of seven hundred to twelve hundred pounds or more.

"3. Poor building-bricks will absorb from one-seventh to one-fourth of their weight of water in twenty-four hours, and average a little more than half the transverse and crushing strength of good bricks.

"4. An immersed brick is nearly saturated in the first hour of immersion; in the remaining twenty-four hours the absorption is only one-half to four-fifths of one per cent. of its weight, as a rule.

"5. The strength of bricks in the kiln is least in the top course, and increases quite rapidly for the first ten or twelve courses, and afterwards more slowly down to the arch bricks.

"6. The size of bricks varies greatly in different parts of the country, the weight vary from 3.84 to 6.34 pounds. The Eastern bricks tend to smaller sizes than do the Western, but the variation is often considerable in different makes of bricks in the same locality.

"7. Bricks made by the dry press are, as a rule, notably less porous and stronger than those made by the wet mud process. To this rule, however, there are some exceptions."

FLOATING DRAINERS FOR SEWAGE WORKS.

The Glenfield Co., of Kilmonock, have recently supplied to the Glasgow Corporation some novel floating drainers which are used to empty the clear liquid from the surface of the precipitation tanks used in the system of sewage disposal, after the sewage has settled to the bottom. These drainers are controlled by double-faced sluice valves, operated by rods passing through pillars placed on the walls, with hand wheels for opening and closing. According to the engineer they are placed close to the sides of the tanks, so as to be easily operated by men standing on the division walls. Before the sewage is admitted to the tanks the arms are drawn up to an almost vertical position and fixed by chains to the pillars. After precipitation has sufficiently advanced the arms are lowered and the cocks on the pillars of the sluice valves opened to allow water to enter and sink the arms till the floats rest on the surface of the liquid. The floats keep the open mouths of the arms just below the surface of the water, the arms sinking with the liquid till the floats rest on the sludge, after which the arms are again hauled up and fixed to the pillars to await the refill-

ing of the tanks. By this method of surface draining considerable time is saved, and all risk of disturbing the settled sludge is avoided.

The ventilation of sewers is discussed as follows by Mr. Freeman C. Coffin, M. Am. Soc. C. E., in a recent report to the town of Attleboro, Mass.: "I believe in the majority of sewers the only ventilation provided is through perforations in the iron covers of the manholes, and although this alone may not be a perfect method I have never known of any serious results from it. Some advocate carrying a ventilating pipe from the house drain outside the pipe to the eaves of the buildings, but this would add quite an expense. It is also proposed to omit the trap from the house drain and ventilate through the soil pipe in the house. If the town authorities could exercise full control over the plumbing in the houses as well as over house drains, and means were used to keep all traps sealed when the house was vacant, this would seem to be as good a method as could be devised when manhole covers are perforated for an inlet. Under probable conditions, however, I am inclined to advise you to use the perforated manhole covers alone for ventilation."

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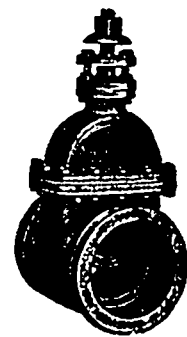
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