

## RECENT DEVELOPMENTS IN PITCH-SAND MASTIC FILLERS..

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ONE of the important changes in specifications made by the American Society of Municipal Improvements at its meeting in Newark, N.J., October, 1916, was that governing bituminous fillers for stone block pavements. The specification that the society has had for years called for a pitch and pebble filler, where a layer of pebbles is swept into joints followed by a pouring of pitch, then another layer of pebbles and more pitch, and so on until the joints are filled. The new specification rejects this method and substitutes pitch-sand, or asphalt-sand mastic as being superior. In general, the specification is similar to that which has been in successful use in New York City since 1913. The wording has been simplified; and more important, the range of melting point has been increased to permit the adoption of the specification in all parts of North America. The specification is as follows:—

"The joint filler used shall be the paving pitch hereafter described, thoroughly mixed with as much hot, dry sand as the pitch will carry, but in no case shall the volume of the sand exceed the volume of the pitch. The sand shall be fine and clean, and all of it shall pass a 20-mesh screen. It shall be heated to a temperature of not less than 300° F. nor more than 400° F. and shall be between these limits when mixed with the paving pitch.

"The paving pitch shall be heated in kettles properly equipped with an approved thermometer, which shall register the temperature of the pitch.

"The mixture shall be flushed on the surface of the blocks and pushed into the joints with suitable tools, re-flushing or repouring if necessary, until the joints remain permanently filled flush with the surface of the pavement.



Fig. 1.—Finishing Mastic Filler on Brick Pavement.

As little as possible of the mixture shall be left on the surface.

"The tar pitch shall comply with the following requirements:—

"(a) It shall have a specific gravity between 1.23 and 1.33 at 60° F.

"(b) It shall have a melting point between 115° F. and 135° F. determined by the cube method in water.

"(c) It shall contain not less than 20%, nor more than 35% of free carbon insoluble in hot benzol or chloroform.

"(d) It shall contain not more than one half (½) per cent. of inorganic matter.

"(e) It shall be free from water.

"(f) It shall have a ductility of not less than sixty (60) centimetres at 77° F.

"The tar pitch shall be used on the work at a temperature of not less than 250° F., and shall at no time be heated above 325° F.

"It shall be delivered where directed by the engineer in time to allow for examination and analysis.



Fig. 2.—Siemens Sand Heater.

"In applying the filler, care shall be taken that the pavers are closely followed by the filler gang, and in no case shall the paving be left over night, or when work is stopped, without the filling of the joints being completed. In case rain stops the filler gang before its work is finished, the joints shall be protected by the use of tarpaulins, or other means, to keep out water. Under no circumstances shall the filler be poured into wet joints."

It will be noticed that the melting point range is from 115° F. to 135° F. Cities that are subject to cool weather for the greater part of the year should adopt a modification of this specification, using a melting point of from 110° to 125° F., while southern cities which have continued hot weather should specify the higher ranges. Also, on hillside work the higher melting point pitch should be used. On grades over 5% and less than 10%, a pitch of 135° should be specified, while for steeper grades, a pitch of 140° to 145° should be used, if the street is exposed in summer to the direct rays of the sun.

During the past year considerable yardage of brick pavements with pitch mastic filler has been laid in the middle west. Fig. 1 is a picture taken on Ionia Street, Grand Rapids, Mich., showing Tarvia mastic filler being applied to a brick pavement. The sand was heated in the Siemens sand heater shown in Fig. 2. Cold, wet sand, so wet that water could be squeezed out of it by hand, was dried and heated to 350° F. in one minute and forty seconds. A Siemens gasoline torch is the source of the intense heat which so quickly and thoroughly dries and heats the sand. Four men can easily move the heater forward as the work progresses. Its capacity is about 2,000 lbs. of sand an hour, raised from 40° F. to 400° F.

Fig. 3 shows the Cleveland sand heater. This is really a plate heater on wheels; its capacity is about 1,200 lbs. of sand an hour raised from 40° F. to 300° F. It is