

4. It shall have a penetration (No. 2 needle, 100 grams, 5 sec., 25 degrees centigrade) of not less than 130 degrees nor more than 180 degrees.

5. It shall have a ductility at 25 degrees centigrade of not less than 75 centimetres.

6. It shall be soluble at room temperature in chemically pure carbon disulphide to the extent of not less than 99.5 per centum by weight in the case of oil asphalts, and native asphalts shall show a percentage of material soluble in carbon disulphide characteristic of the products of the fields from which they come.

7. Of the material soluble in carbon disulphide not less than 14 per centum nor more than 30 per centum by weight shall be insoluble at room temperature in 76 degrees Baumé paraffin petroleum naphtha distilling between 60 degrees and 88 degrees centigrade.

8. It shall show not less than 10 per centum nor more than 18 per centum by weight of fixed carbon on ignition.

9. It shall contain not more than 5 per centum by weight of paraffin scale with a chill point of 18 degrees centigrade when calculated on the basis of distillate.

10. Fifty grams of the material, when heated in a cylindrical vessel 5.5 centimetres in diameter and 3.5 centimetres deep, shall not lose more than 5 per centum by weight nor shall the penetration of the residue (No. 2 needle, 100 grams, 5 secs., 25 degrees centigrade) be less than 50 per centum of the original penetration.

Asphaltic cement for the hot-mix construction was prepared under the following specification:—

1. It shall be thoroughly homogeneous and the various bituminous ingredients contained in it shall be in a state of complete solution. It shall not be oily to the touch.

2. It shall have a penetration (No. 2 needle, 100 grams, 5 sec., 77 degrees Fahr.) of not less than 50 nor more than 75 degrees.

3. It shall not flash below 350 degrees Fahr. when tested in open cup.

4. It shall be soluble at air temperature in carbon disulphide to an extent characteristic of the material

7. It shall yield not more than 16 per cent. by weight of fixed carbon on ignition.

8. Fifty grams of the material, when maintained at a uniform temperature of 325 degrees Fahr. for 5 hours in a cylindrical vessel 5.5 centimetres in diameter and 3.5 centimetres deep, shall not lose more than 5 per cent. by weight. The penetration of the residue remaining shall not be less than 50 per cent. of the original penetration.



Fig. No. 6.—Sanding Over the Squeegee Coat

9. It shall have a ductility (Dow Mould, 5 centimetres per min. 77 degrees Fahr.) of not less than 75 centimetres.

10. In this specification "bitumen" shall mean any hydrocarbon or hydrocarbons soluble in carbon disulphide.

The sand requirements of the specification were as follow:—

The sand shall be hard-grained, clean, moderately sharp and shall not contain more than 1 per cent. of clay or loam. On sifting, the whole shall approximate, as nearly as possible, the following grading:—

Percentage of sand	Pass	Retained on
20	8 mesh sieve	30 mesh sieve
27	30 mesh sieve	50 mesh sieve
30	50 mesh sieve	80 mesh sieve
15	80 mesh sieve	100 mesh sieve
7	100 mesh sieve	200 mesh sieve
1	200 mesh sieve	

Regarding the crushed stone and screenings used on the road, the requirements of the specification were as follows (NOTE: All stone used on the job fulfilled the requirements of Grade B):—

Crushed stone shall be bedded rock or boulders which have been broken by mechanical means into fragments of varying shapes and sizes. It shall not contain more than 10 per cent. by weight of soft or friable material. Material of which the particles are coated with dirt or have the edges worn off will not be accepted.

No crushed stone shall be accepted which shows signs of being disintegrated or reduced in quality by the action of the weather.

Crusher run shall be the product of the crusher, of which not more than eight per cent. by weight shall pass a one-quarter inch opening.

The following schedule of sizes shall be used, with the percentages of material larger than the maximum and smaller than the minimum openings respectively as shown. The sizes of opening shall mean the diameter of circular openings in steel or iron plates. The percentages shall be determined by weight.



Fig. No. 5.—Putting on the Squeegee Coat

obtained from the same source as that which it is proposed to use.

5. Its bitumen, as determined by clause 4, shall be soluble in carbon tetrachloride to the extent of not less than 98.5 per cent. by weight.

6. Its bitumen, as determined by clause 4, shall be soluble in 76 degrees Baumé paraffin petroleum naphtha to the extent of not less than 65 nor more than 85 per cent. by weight.