

SAND-HAY-TAR EXPERIMENTAL ROAD

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NOTE.—[Sandy roads are more or less common throughout Canada. The following account of experiments recently carried out by the Wisconsin Highway Commission will, therefore, be of interest to many readers.—EDITOR.]

IN the counties of Wisconsin, near the town of Portage, the soil is sandy. Practically no stone is to be found, and gravel does not occur. What stone there is, is of inferior quality and useless for road building. Traffic cuts deep ruts in the sandy roads, cuts so deeply that a motorist who is not a "sand driver" hopelessly stalls his car in them. The roads do not gain by being dragged or shaped up with a scraper, for within 24 hours after such treatment, they are worse than ever.

The sand is of such grade that it is difficult to make it stable with any usual treatment. After a heavy rain much of it acts like quicksand. The farmers living along these roads have occasionally strewn hay over the sand. This forms a mat which lasts for a season and makes the roads passable. But the hay eventually grinds up and leaves the road nearly as bad as it was before.

Mr. A. R. Hirst, Wisconsin's highway engineer, after careful study of conditions, hit upon the plan of giving



Spreading the Hay

the hay a treatment of tar which would preserve the hay, and aid materially in forming the mat surface. To import broken stone or gravel would be too expensive and if this simple expedient of tarred hay works, it means a passable road at slight cost.

On August 23rd, the writer accompanied Mr. H. J. Kuelling, assistant highway engineer of Wisconsin, to Rio, where an experiment was made.

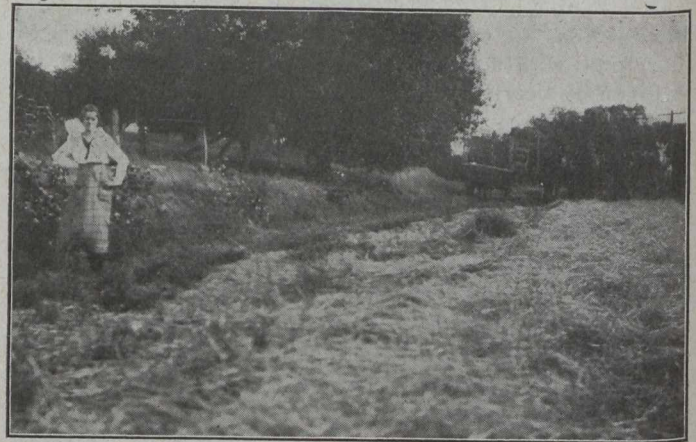
A road machine shaped the road up in the form of a trough to hold the hay. The machine passed over the road twice, cutting to the shape as shown. Hay was placed loosely over the road for a depth of 5 to 6 inches.

Next, a half gallon of Tarvia "B" was spread uniformly over the hay. An examination of the hay showed that the tar only lay on the top surface of the hay and did not at first find its way down through the mat. This was unexpected and caused doubt as to the preservative value of the tar, which doubt however was dissipated as will be described later.

Another layer of hay was next applied about the same thickness as before. This was given a half gallon of tar and then the road was lightly sanded. Traffic was ad-

mitted immediately and did not become bespattered with tar.

The day was a very cool one, and a high wind was blowing. The work went forward rapidly and no trouble was had with the hay blowing away, despite the wind.



Straw Spread Ready for Application of Tar

The experiment was laid out as follows: "A" 450 ft. of marsh hay treated as described above; "B" 350 ft. of rye straw treated as described above; "C" 200 ft. of marsh hay untreated; "D" 200 ft. of rye straw untreated. The untreated sections were for comparative purposes. Later, a short stretch with a one-coat tar treatment was built.

On September 29th, five weeks later, the writer examined the road. The untreated sections presented a yielding, springy surface. That section built of straw showed the straw to be broken up into small bits that the wind could scatter. The hay section was very much better, for this marsh hay is tough and wiry. The treated section of straw was only fair, but the treated section of hay was in excellent condition. A thorough examination showed that the tar had penetrated to the sand base, completely covering it and entering into the top one-half inch. The hay was entirely coated with tar and was uniformly black, as though it had been dipped in a tar barrel. Traffic had matted the hay into a mattress about one inch thick, and both auto traffic and horse-drawn vehicles found a satisfactory surface over which to travel.



Applying Tar to Straw; First Application

The residents along the road seemed well satisfied with the results.

The mat, a portion of which was cut out for examination, was tough and compact. With more traffic, it is probable a nearly waterproof surface will be formed.