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# MUNICIPAL JOURNAL AND ENGINEER

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## MUNICIPAL APPLIANCES

### Paving on Bridges

A paving that is much used on bridges is the Shuman W and A Sectional Paving made by R. F. Shuman & Co., 88 Washington street, Chicago. It has also been used in front of some of the public buildings. This paving is made up in sections about three feet square and consists of strips of hard wood about one inch thick and three inches wide, bolted together and giving the edge of the strips for a wearing surface. The wood is thoroughly treated and waterproofed before being made up. It has been found in Chicago that this material will so far outwear ordinary oak planking on bridges that it is very much cheaper.

In submitting specifications for a proposed bridge City Bridge Engineer Thomas G. Pehlfeldt made the following report:

On November 20, 1904, the Kinzie street bridge was paved with the Shuman pavement after a thorough investigation had been made as to its merits. Since that time the pavement has been in constant use with the exception of about two months in 1905, when the bridge was closed to traffic for general repairs; and while some signs of wear are showing, the pavement will be serviceable for two or possibly three years to come. Prior to November 20, 1904, this bridge was paved with 3-inch oak planks, which would wear out and had to be renewed three times a year. The last oak plank pavement on this bridge was laid in July, 1904. After being in service for four months this pavement was completely worn out, and on November 20, 1904, the Shuman pavement was substituted.

The cost of Shuman pavement as laid on this bridge, including material and labor, was \$1,011.70, and as the roadway of the bridge contains 302 square yards, the cost per square yard was \$3.35. The cost of the 3-inch plank pavement laid on the same bridge in July, 1904, including material and labor, amounted to \$600.98, or \$1.99 per square yard. The Shuman pavement has been in use nearly three years and is still in good condition, but, granting its life to be only three years on this particular

bridge, its cost per year would be \$337.23. The cost of the 3-inch oak planking, the life of which is four months on this bridge, would amount to \$1,802.94 per year. These figures represent the actual cost of the respective pavements and are not based on assumptions and estimates. It will be seen that by using the Shuman pavement on the Kinzie street bridge the city has effected a saving of nearly \$1,500 per year, and at the same time saved the public the delay and inconvenience that would necessarily be occasioned by the renewal of the plank pavement three times a year.

### Asphalt Plant

The Guelich Portable Asphalt Plant Company, of Chicago, Ill., has just completed and perfected a new machine embodying the principles of their older machines, but having a much larger capacity and showing greater refinement in the details of construction. The Guelich machines are capable of making new sheet asphalt, either from entirely new materials or by the addition of asphaltic cement to old pavement, as well as asphaltic concrete. The machine is designed either for municipalities desiring to do their own work or for private contractors.

Some of the details of the new machine follow. Its total weight is about 22,000 pounds. For operating the machinery and for moving the machine from place to place, an 18-h.-p. traction engine is furnished. The asphalt machine has a frame made up of 8-inch I-beams carried on strong metal wheels. Attached to the middle of this frame is the furnace with its double doors. The walls of the furnace are of fire brick and the ends are inclined at such an angle that the heat reaches the extreme ends of the cooking drum. The grates are made in small sections which can easily be removed when necessary. Of particular interest is the ash box which gives absolute control of the fire and prevents hot coals or ashes dropping onto the street beneath the machine.

The mixing drum is of their regular type eccentric roller drum, being, however, considerably larger. It is 50 inches internal diameter and 10 feet 6 inches long. Sets of blades placed at 90° with each other serve to thoroughly stir the

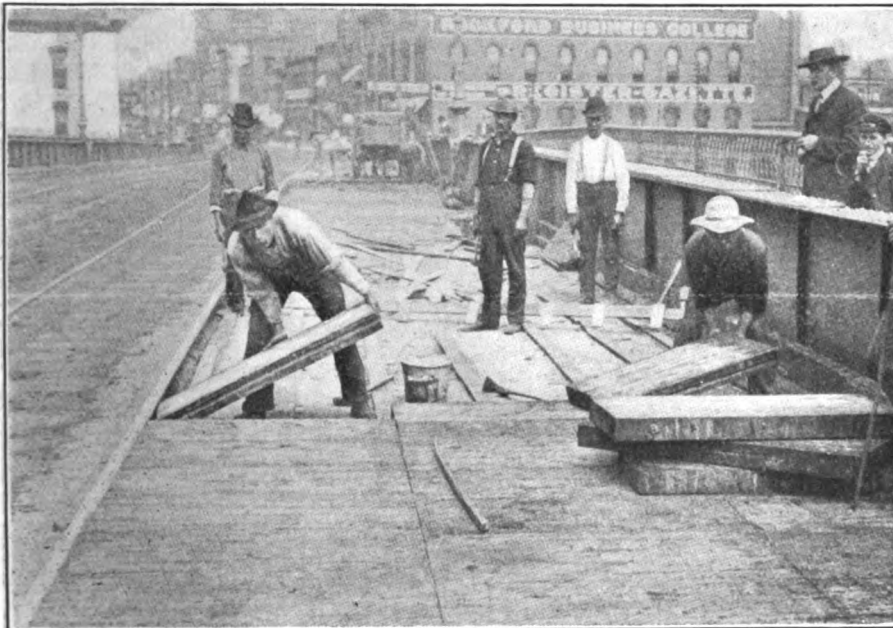
material. The drum is mounted on four heavy rollers, two at each end and is driven by gearing. The gear on the drum is of cast steel bolted in place, so that if it becomes broken it can easily be replaced. At the front end of the mixing cylinder is a door from which the mixed material is discharged. At the rear end at the center of the mixing drum is introduced a screw conveyor which delivers the hot aggregate. At the same place the liquid asphalt flows in and comes in contact with the aggregate as both enter.

At one side of the machine and extending partially over the mixing drum is the asphalt tank. This holds between 1,100 and 1,200 pounds of asphalt and is heated by hot air passing around it. If necessary, dampers can be opened which permit heat to pass directly around the asphalt tank to increase the rate of heating, or other dampers can be opened admitting cool air to retard the rate. The asphalt is raised to the top of the machine by means of a light detachable derrick fastened to the side. Here the attendant deposits it in the melting tank through doors. The melted asphalt is delivered to the measuring tank by means of a pump. At the opposite side of the machine are two cylindrical revolving driers with a total length of 17 feet for drying and heating the aggregate. A fan at the top of the machine draws the heat up over and around the mixing drum and the lower drier, and passes it through the interior of the upper drier carrying the steam given off to the outlet. The aggregate is dumped into a conveyor at the side of the machine which elevates it to the top, where it is introduced into the top drier. Passing through this it is dropped into the lower drier which empties into a second conveyor which finally deposits it in a measuring bin at the top of the machine. The driers revolve on shafts running on roller bearings. The driving of all parts is by means of friction clutches, thus reducing the danger of breakage of parts to a minimum.

In the operation of the machine, one man standing on the platform on top has control of all apparatus. Thermometers are so arranged that at all times he can learn the temperature at various points. The regular batch is about 3½ cubic yards, which can be introduced into the machine in 4½ minutes. Three batches may be turned out in an hour, which would supply sufficient material to cover about 1,200 square yards in ten hours.

### Bitose Fillers and Road Oils

The Ellis Co., East Brooklyn Station, Baltimore, Md., manufactures bituminous preparations of various consistency for use in connection with block pavements and macadam and earth roads. All the Bitose preparations are manufactured from petroleum, with an asphaltic base by a special process controlled by the company. They have a purity of 99 per cent. As prepared as a filler for stone or brick pavements, Bitose is tough and rubbery from all temperatures, from zero to 150° F., and is liquid at 250° F. The weight of this preparation is 8 pounds to the gallon, as compared with 10½ to 12 pounds for some fillers. Two preparations are made for road treatment: A for sprinkling, and B for mixing and rolling into the surface. The former is applied cold after the road is swept by a laborer with a can or by means of a sprinkling cart. Bitose B is applied hot after the surface of the road is harrowed. After the application has been made the road is rolled with a steam roller.



LAYING SHUMAN'S WOOD SECTIONAL PAVING