CONSTRUCTION OF BRICK ROADS.

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A desirable road is one that will remain in constant condition for satisfactory travel for a great many years; a road that will not need constant repairs, which can be really repaired and not patched; one that will be dustless, will not become wavy, and will not crack, yet flexlible enough to adjust itself to settlement of the subgrade and remain waterproof and practically skidproof.

Brick with plastic filler seems to fulfill these requirements. Not the brick road that is carelessly or ignorantly built; not the brick road that is built according to the whim of some inexperienced person, but the brick road that can be and is built according to the most improved methods affording a quality and service in keeping with the price paid for it.

About five years ago a committee was appointed by the Federal Highway Council to investigate and study natural influences involved in the subgrade and its relation to road surfacing and traffic. One of the principal discoveries resulting from the activities of this committee discloses the fact that subgrades of most soils throughout the country are subject to expansion and contraction due to the influence of water. The forces of expansion in the case of a saturated subgrade are of extraordinary power, often resulting in the destruction of rigid surfaces. As soon as this fact was established it became apparent that the practice of constructing a rigid slab was entirely wrong and so the design for the brick pavement was changed in order to counteract the destructive agencies discovered.

This type of brick wearing surface for roads and pavements is known as the vertical fiber brick pavement. The name is taken from the method in which the brick are laid in the pavement with the fiber or grain perpendicular to the road surface. These brick are wire-cut and the wire-cut surface is placed up in the pavement affording an excellent surface for the coating of asphalt.

In the construction of the vertical fiber brick pavement the old gravel or macadam road, after proper preparation, makes a good base. This kind of a base is not rigid and avoids the impairment of the pavement by contraction and expansion forces.

When it is necessary to remove practically all the metal on a roadway, in order to place the new surface to grade, it is customary to use cement concrete for base material. When such a base is to be placed for the fiber brick construction, engineers will find that a five (5) inch base is ample. The cushion course

and asphalt filled brick afford ideal protection to the base from traffic impact.

Over-designing is as poor engineering as under-designing. The taxpayer is beginning to feel the cost of local improvements more than ever, and it is, therefore, necessary that every care be given to the design of the road to reduce the cost to as low a figure as is consistent with safety. Many miles of roads and many of the heavy traffic streets throughout the states west of the Mississippi River are paved with vertical fiber brick surfaces on four inch concrete bases and are giving satisfactory service.

Upon the base course a cushion is spread by means of a template. This cushion is of sand or sand-mastic, and should never be of a greater thickness than one (1) inch. This should be rolled with a small hand roller in order to obtain a uniformly compacted cushion. The mastic cushion consists of seven (7) to ten (10) per cent of refined tar or asphalt and sand. In resurfacing, where the paving block of greater depth would raise the surface of the finished pavement above the established grade, it is customary to use the smaller fiber block, two and one-half (2½) inches in thickness. These blocks, when embedded in the elastic cushion, will withstand the heaviest impact of traffic. After the cushion course is prepared, the vertical fiber pavers are laid in the usual manner and then rolled with a self-propelled roller weighing not over five (5) tons until the surface is smooth.

Immediately after the rolling the filler should be applied. It is very important that the filler be of the highest quality of special refined asphalt so that it will adhere firmly to the brick and will not become brittle under freezing temperature or become too soft or bleed in the summer. The filler should be poured on the pavement at a temperature of not less than three hundred (300) degrees Fahrenheit and squeeged in to the interstices, care being taken to completely fill the joints so that after cooling there will not be a settlement of over a quarter of an inch. No more asphalt should be left on the top of the brick than is necessary to completely cover the brick.

As soon as the asphalt is poured and cooled, so that there will be no more settling of the asphalt in the joints, a coating of fine sand should be spread over the pavement to a depth of about one-half (½) inch and rolled into the asphalt. A little excess sand should be left on top of the pavement for about ten days for the traffic to work in. As soon as the sand coating is rolled, the pavement may be opened to traffic. Compliance with these details will secure an ideal pavement.

There are many kinds of surfaces that can be constructed at a lower cost, but a good road at $40,000 a mile is far cheaper than a poor one at $20,000. The lower cost roads built a few years ago in many places are gone or requiring expensive repairs. We must build roads to hold up under traffic.