

BRICK ROADS ARE EASILY MAINTAINED



Laying Vitrified Brick for Country Road Pavement.

Vitrified brick roads, according to the road specialists of the department of agriculture, possess three distinct advantages. First, they are durable under all traffic conditions; second, they afford easy traction and moderately good foothold for horses; and third, they are easy to maintain and keep clean. On the other hand, they are unquestionably expensive to construct and the effort to reduce the high first cost frequently results in inferior construction and consequent defects.

The cost of a brick pavement depends so much upon so many variable factors such as the locality, freight rates and the distance from brick kiln that it is not possible to make any definite estimates. The cost of the rough grading, however, should be considered entirely apart from the cost of the pavement, for the grading would have to be done no matter what kind of a road was to be built. Excluding this item, the bulletin already mentioned (No. 245) furnishes the following formula as a rough guide for the probable expense of a brick road with a six-inch concrete foundation and suitable grades: Cost per square yard equals 1.90-L, plus .213-C, plus .138-S, plus .157-A, plus .040-B.

In this formula C equals cost of cement per barrel, S equals cost of sand per cubic yard, A equals cost of coarse aggregate per cubic yard, B equals cost of paving brick per 1,000, and L equals cost of labor per hour. Thus, if labor costs 25 cents an hour, the labor cost per square yard of pavement will be 1.90 times 25 cents, or 47.50 cents. The cost of the cement per square yard will be .213 times the price of a barrel and so on with the other items. It is assumed in this formula that all materials are delivered on the work. About 10 per cent should be allowed for wear on tools and machinery, and for every inch subtracted or added to the thickness of the foundation there will be a corresponding difference of 8 to 12 cents per square yard.

A more important test is known as the rattler or abrasion test. In this the bricks are subjected to destructive influences similar to those encountered in actual service, and the effects resemble those which traffic may be expected to produce upon the completed pavement. Briefly the test consists of inclosing 10 dried bricks in a steel barrel in which there are also placed a number of cast-iron spheres. Ten of these spheres weigh each 7½ pounds. Enough smaller ones weighing a little less than a pound are added to make the total weight approximately 300 pounds. The barrel is then revolved at the rate of 80 revolutions a minute for an hour. At the end of that time the bricks are taken out and weighed, and their loss in weight ascertained. In this test good paving brick will lose from 18 to 24 per cent of its weight.

Equally important with the char-

acter of the brick is the character of the roadbed on which it is to be laid. The four essentials for the roadbed are thorough drainage, firmness, uniformity in grade and cross section, and adequate shoulders. Where the first can be obtained in no other way it may be necessary to lift the road considerably above the surrounding land. Firmness is secured, if the road has been properly drained, by making certain that the roadbed is thoroughly compact. The subgrade must be repeatedly rolled and reshaped until the desired grade is secured.

Strong, desirable curbing is necessary for all brick pavements in order to prevent the marginal brick from becoming displaced, which event would result in deterioration, finally spreading over the entire pavement.

One of the most essential factors of a brick pavement is a firm foundation upon which to lay the brick. The importance of this is evident when one considers that the ability of pavement to resist wear depends upon the smoothness of the pavement and a firm foundation. If the foundation is poor one of the bricks may be easily forced down, causing unevenness in the surface. Where the traffic is comparatively light and the subgrade composed of material that does not readily absorb water, broken stone may make a satisfactory base. For heavier traffic or where the material composing the subgrade is at all unstable a concrete base is necessary.

After the brick has been laid upon this cushion and the pavement gone over carefully to remedy all defects and remove all imperfect material, it should be rolled with a heavy power roller, gone over carefully once more, and the joints then filled with some material to prevent the brick edges from chipping. Of the various materials used for this purpose a grout made of equal portions of Portland cement and sand mixed with water is recommended. Sand alone is sometimes used because of its cheapness, but it is open to several objections and its use in the end is probably not economical. Portland cement grout, on the other hand, binds the individual bricks together and converts the pavement into what is practically a monolith. Before the grout is applied the pavement should be swept clean and be kept moist by gentle sprinkling during the application, of which there should be two. At the end of the second application the grout should completely fill the joints flush with the tops of the joints. The final step is to cover the completed pavements with a one-inch layer of fine earth. This is done to protect the pavement from the weather and to keep it in a moist condition while the grout is hardening.

In addition to the description of the various problems the new bulletin contains in an appendix complete typical specifications for the construction of a brick road.

WAYS OF TACTFUL NURSE

Many Things That Should Be Observed by Those Who Would Minister to the Sick.

The best training in the world cannot turn a woman who has not the gift for nursing into a tactful nurse. Efficient and dependable she may be trained to be, but tact and sympathy must come by insight. However, there are certain rules and certain little niceties that anyone trained or untrained can and should remember when they are in the sick room.

Be careful that you have no annoying little tricks, such as clearing your throat, humming, rocking, drumming with your fingers or making any unnecessary noise that might be irritating to tired nerves. As most people who have such tricks are quite unconscious of them themselves, it is quite necessary to stop and think occasionally to be sure that you are guilty of none of them.

Another habit most annoying to patients is one that many nurses have of talking to other people, the doctor or family, in an undertone or whisper within hearing of the patient. This is as unnecessary and discourteous to an ill person as it is to a well person, and to many patients it is alarming as well. If you have anything to say that cannot be said in the hearing of the patient, go out of the room to say it.

A still more necessary point to remember is that the most exquisite neatness must be the order of the sick room. The slightest disorder is often intolerable to a nervous patient. Remember that all the patient would wish to have done in her room you must do for her, otherwise she will worry about it. If she is an habitual person and accustomed to have her furniture and personal belongings just so, it will fret and worry her to have them misplaced. Do not leave medicine bottles, bandages or any paraphernalia of the sick room in sight. They are depressing as well as ugly.

Do not insist upon straightening the bedclothes if your patient wishes to be let alone. Do not insist on anything that is unnecessary in the way of attentions or regulations. Above all, hold it always in your mind that you must study and consider your patient's personality and subdue your own. Do not thoughtlessly impose your will and habits upon a helpless, nervous invalid.

Modern Farming.

United States Secretary of Agriculture Houston was describing at a dinner in Washington the changes that have come over farming methods.

"It's an age of machinery today," he said. "The milking machine has succeeded the milkmaid. The phonograph has succeeded the melodeon. The motor plow has succeeded the horse plow."

"There's an appropriate story about a young farmer who loved two girls equally—the one slim and petite, the other tall and herculean.

"The young farmer in this dilemma asked his father's advice. The father, puffing thoughtfully on a Havana—for your modern farmer is too prosperous to smoke domestic cigars—answered:

"There's so much machinery used in farming nowadays, James, that a big, strong wife is hardly needed. I advise you to take the little one—she'll eat less."

Pottery Made in Thirty-Seven States.

Thirty-seven states in 1914 reported a production of pottery. It is announced by the geological survey. White ware was reported from eight states, china from four states, sanitary ware from ten states and porcelain electrical supplies from nine states. Red earthenware, the commonest of pottery products, was reported from thirty-two states, and stoneware from twenty-eight states.

CITY'S VARIED HISTORY

VILNA HAS LONG BEEN A PLACE OF IMPORTANCE.

Made Capital of the Province of Lithuania in the Fourteenth Century—Figured in the Disastrous Campaign of Napoleon.

They call Vilna "Little Paris." The resemblance is not, however, striking to the western eye. When you have discovered that Vilna stands on a river, with hills rising above it, you will find little more suggestion of Paris. Its river, the Viliya, can hardly be 200 yards wide, and flows through many winding gorges or defiles densely shadowed by fir and birch. The town is crowded in narrow and not too savory streets on the slopes of the hills, and above it, on the summit, called Zamkocaya Gora, or Castle hill, stand the ruins of an eight-sided tower of red brick, the remains of the castle which Gedymis, grand prince of Lithuania, built early in the fourteenth century, when he established Vilna as his capital. But the site has a much older history. Whatever the primitive faith of the Lithuanians may have been—and strange are the stories in old chronicles—it is reasonably certain that far away in the dark ages they were worshipping a sacred fire kept forever burning, like the flame of the Roman Vestals, at the foot of this Castle hill. We may, therefore, assume that Vilna, like Chartres and many another city now forever associated with the glories and the mysteries of the Christian faith, was a shrine of an older and grimmer religion long before its hills had heard the message of Christianity. On the spot where the pagan fire flamed stands now a place like a Greek temple, the Cathedral of St. Stanislas, wherein is the silver coffin of the great Polish saint, Casimir. But there is a sanctuary in Vilna more honored. Above the old town gate near the railway station there is a chapel which possesses an image of the Virgin far-famed for miracles. You may see the street below full of ranks of worshippers kneeling and crouching in prayer. Catholics of the Latin and of the Greek church unite in their faith in the Virgin of the Ostra Brama chapel.

Vilna is the headquarters of the governor general of the Lithuanian provinces and of an army corps. It is an important educational center. It has a large trade in timber and grain. At the present time its population may be estimated at 200,000 people. But its chief importance is neither administrative nor commercial. It stands at the junction of the railways from Berlin and Warsaw to Petrograd, that is, it is one of the greatest centers of communication in Russia. From the German frontier it is 120 miles distant, from Petrograd more than 400. From Warsaw it is 267 miles. But these railways, though the most important, are not the only lines which converge on Vilna. It is connected by a line running southeast, through Minsk, with Kieff and the great resources of southern Russia, while yet another branch gives communication due south with the fortress of Brest-Litovsk and the Pripet valley and Rovno. Through Minsk on the southeastern line runs the railway, which by way of Smolensk reaches Moscow.

It was Vilna which Napoleon chose as the advanced base of his famous invasion of Russia. He secured the line of the Niemen and made Vilna the strategic center of the French forces. When he advanced he left Murat in command of his magazines and hospitals. The greatest of French leaders of cavalry seems an odd and inexplicable choice for such a post. Nor did Murat, who might have done much for the advance and something for the retreat, distinguish himself at the base.