

The first operation is to set the curb.

Then the old pavement is removed and the street graded from curb so that the subgrade shall be exactly parallel to the finished grade and as much below same as the added depth of the wood block, the cushion and the concrete foundation. Soft or spongy places should be dug out and refilled with proper material. Unless the subgrade is quite solid it should be compacted, by tamping or rolling with a heavy roller.

Upon this subgrade must be placed a concrete base, finished with a commercially smooth surface, and from four to six inches in depth, depending on the traffic and the condition of the subgrade. The concrete should be constructed in accordance with the materials and methods described in the specifications reported by the committee on cement adopted January, 1912, by the Association for Standardizing Pavement Specifications.

In general the question of concrete has been worked out in each locality according to the materials available, and all that is needed is a good substantial base that is deep enough to carry the traffic.

Great care should be taken to secure a smooth surface on the concrete and to keep it exactly parallel with the finished grade.

Three longitudinal rows of grade stakes should be put in. One row down the centre of the street and one row midway between the centre and each curb. The stakes in each row should be about fifteen feet apart. With a good concrete gang this should be sufficient, but with an inexperienced gang the stakes in each row should be closer. On a wide street intermediate rows should be added. For very particular work masons' lines may be stretched along the longitudinal stakes.

After the foundation has set thoroughly, a layer of sand, or of sand and cement (1 cement to 4 sand) is spread over it and struck to a true surface exactly parallel to the top of the finished pavement and as many inches below same as the depth of the blocks to be used. This cushion or bed is simply a means of securing a perfectly uniform surface for the blocks to rest upon, and if the concrete has been properly laid should not average over $\frac{1}{2}$ inch in thickness for mortar cushion and one inch for sand cushion. Whichever material is used should be laid dry and free from pebbles. If it is not perfectly dry it should be combed out with a rake, smoothed to an approximate surface, rammed or rolled and then struck with a drawing board.

There are two ways of striking the even surface required. One of the most common, but not the best, is to use flexible strips of wood or iron about three-eighths of an inch thick and four inches wide. These strips are set parallel to each other and about eight or ten feet apart, running from curb to curb. They should be imbedded in sand throughout their length, so that their top surface shall be parallel to the grade of the finished pavement and as many inches below same as the depth of the blocks to be used. The space between the two strips having been filled with a bed material, a true and even top is struck by using an iron-shod straight-edge on the strips as a guide, and as soon as the bed has been struck the strip which would interfere with laying the block shall be removed and its place carefully filled in with cushion.

The other and better method is to draw the bed in a direction parallel to the curb. Instead of flexible strips pieces of wood are used about twelve feet long and as wide and thick as the blocks are deep. These guide pieces are set parallel to the curb and to each other and are bedded on cushion material throughout their length so that their top surface shall coincide with the top surface of the finished pavement. One such guide is placed next to each curb and one is set one foot off the centre of the street. The space between the guides having been filled with cushion material,

a true and even top surface is struck by using an iron-shod templet which is one foot longer than one-half the street width. This surfaces one-half the bed. The middle guide is shifted one foot off centre in the opposite direction and the other half of the bed struck. The guides are then removed and the bed is ready for use without the necessity of any hand fluting. The templet has notched ends as it is drawn over guides which are level with the top of the finished pavement, while its drawing edge is below that level by the depth of the block. Shoes should be fastened to each end of the templet to prevent its tipping while being drawn.

The second method is much superior to the first. It is more accurate, quicker and cheaper.

The question as to whether a sand or mortar cushion should be used is a matter of opinion, as both have given excellent results. In general sand gives a true cushioning effect, and the blocks do not have to be rolled as soon after paving as when a mortar cushion is used. The mortar cushion is better on appreciable grades especially in car track work. If mortar cushion be used the pavement should be sprinkled sufficiently during the rolling of the block to supply water to set the concrete.

English and French practice does away with a soft cushion. The concrete base is floated over to a depth of one inch with a one to three mixture of cement and sand laid to the proper crown. This is allowed to set thoroughly.

After the bed is prepared provision for expansion joints is made by placing boards along each curb. These boards should be about six inches wide and thicker on one edge than the other, so that they may be easily withdrawn after the blocks are paved. They should leave an inch and one-half space to be filled with bituminous material.

Alongside the above board three rows of block should be paved parallel to the curb. On the rest of the street the block should be laid at right angles to the curb. Blocks should be laid neither too tight nor too loose—about so that before the joints are filled any block can be easily pulled out of the pavement by jabbing a knife blade into it.

The blocks should be paved with the grain vertical and all joints broken by a lap of at least three inches.

With streets of light traffic it is desirable and necessary to have transverse expansion joints. These should be about three-quarters of an inch wide and placed from 25 to 50 feet apart.

After the blocks are paved the surface should be rolled with a roller weighing from $2\frac{1}{2}$ to 5 tons and then inspected, and any lack of uniformity or unevenness corrected by taking up and relaying the defective portion.

The joints should then be filled with clean sharp sand, perfectly dry and free from pebbles. The sand should be thoroughly broomed until the joints are completely filled. The surface should then be covered with one-half inch of sand and traffic admitted to the street. It will take about ten days under traffic for the joints to take up all the sand they require.

In England where they use a smooth hard concrete surface they lay two courses of hand-dipped (in pitch) block parallel to the curb. A space of from one to two inches is left between the curb and the wood block to allow for expansion; this space is filled with clean puddled clay or approved bituminous filler. After laying the blocks a mixture of boiling pitch and creosote oil is poured over the whole surface and well forced into the joints and the surplus scraped off with wooden or rubber squeegees. A top dressing of crushed stone, passing a $\frac{3}{8}$ -inch screen, is then spread over the pavement.

In some places the top of the concrete is flushed with a bituminous material just before paving.