

swept clean of all dirt, etc. Knowing the type of mixture to be laid and the number of pounds used in each batch and the number of batches per wagonload, it is usually possible to determine in advance how many square yards should be covered by each wagonload. The best street foremen, before laying any bituminous material, measure the width of the street and calculate the number of lineal feet which should be covered or "pulled" by each load. A tape is then laid along the curb and a chalk mark made at the point where the raked material from each load should end. Where the foundation is reasonably smooth and in accordance with the contour of the finished pavement, this method is one of the best checks for determining the thickness of pavement laid. Ordinary sheet asphalt pavement 2 ins. thick will weigh 200 pounds to the square yard. Pavements containing a large proportion of good sized stone will vary somewhat from this weight, but the exact weight per square yard can easily be determined during the first day's run.

As soon as the material reaches the street, its temperature should be noted. The hot material should be dumped outside of the spot where it is to be laid in order that all of it will have to be conveyed to its final resting place by means of shovels. This results in a preliminary spreading of material of approximately the same density. Where the load is dumped on the spot on which it is to be spread it will inevitably be tramped upon and certain portions of the heated mixture will receive more compression than others, which will eventually result in an uneven surface to the finished pavement. In certain classes of bituminous mixtures, notably those containing large particles of stone, where the haul is long, the coarser particles may settle to the bottom of the load. If this takes place to any great extent, the load when dumped should be re-mixed by turning over with hot shovels. In shovelling the hot mixtures into place the shovellers should not dig into the top of the pile but should shovel from the bottom of it, cleaning up the loose material as they go. If this is not done, the lower layer of the pile, in cold weather, will have become chilled by its contact with the cold foundation and it will be difficult to remove it completely and uneven distribution and compression will result. The mixture, after having been deposited roughly in place by means of shovels, is spread by means of hot rakes. During this operation the rakers should not stand in the hot mixture any more than is necessary. Care should be taken to maintain a uniform and even grade so that there will be no depressions in the finished pavement which will hold water. Some mixtures compress very much more than others, so that it is impossible to establish any definite rule for the depth to which the hot mixture shall be raked.

As soon as possible after raking, the mixture should be rolled. Some mixtures are more tender than others and must be allowed to cool off somewhat before putting the hot roller on them. The hotter the mixture, the greater will be the compression and it is, therefore, desirable to roll it as soon as possible. In very cold weather, especially when a strong wind is blowing, the surface of the mixture will chill quite rapidly. With a tender mixture it is often advisable to use a light hand roller over it as soon as it is raked in order to close up the surface and then follow this with a heavy steam roller as soon as the mixture will bear it. Undue delay in rolling the mixture will result in a more or less honeycombed surface. Depending upon the contour of the street and its width, the rolling should be first done parallel with the curb. This should be followed by diagonal or cross rolling and the final finish of the work by rolling parallel

to the curb again. The exact method of handling the roller can usually be left in the hands of the roller engineer if he is an experienced man, as he should know how to smooth up the finish of the pavement better than will the average inspector. At the finish of the day's work it is necessary to leave the pavement in such condition that a proper joint may be made with it when the next day's operations are commenced. There are a number of methods of doing this. Perhaps the best is the rope joint in which a length of rope is laid across the extreme edge of the pavement and rolled into it while hot. When this is taken up very little cutting back will have to be done and the edge will be left in such shape that a satisfactory joint can be made. The practice of painting these joints with hot asphalt cement before laying fresh pavement adjacent to them is to be avoided whenever possible, as the tendency is to put too much asphalt cement on the joint. This asphalt cement is absorbed by the hot mixture and softens it at that point and traffic is liable to displace it. For the same reason the painting of edges of curbs, manholes, etc., should be done with extreme care. A very convenient instrument for determining the depth of the finished pavement is a putty knife with a blade 2 in. wide which has been marked across the face of the blade at a point corresponding to the required depth of the pavement. This can easily be inserted in the warm mixture after it has been rolled and the broad point will bridge over any small depressions in the foundation and avoid the recording of a greater depth to the pavement than really exists.

The use of hot smoothers should be avoided whenever possible. With the proper mixture and one which has been rolled while hot, the surface should be entirely closed up. Under unfavorable weather conditions, in order to close up the surface, it may be necessary in certain places to use hot smoothers. Care should be taken to see that these are not too hot; otherwise they will burn the pavement and scaling will eventually result. The inspector on the street should, whenever possible, keep an accurate account of the number of loads delivered. Knowing the number of pounds of mixture per load and the weight per square yard, he can then check up the yardage which should have been laid with the material delivered on the street if it were raked to the proper thickness.

**Inspection of Finished Work.**—If the inspection at the plant and street during the construction of the pavement has been adequate, the final inspection of the work will be chiefly confined to an examination of the contour and surface of the street. During this examination careful note should be made of whether or not the mixture has been thoroughly compressed and is closed up on the surface. Where there has been no inspection during the manufacture and laying of the pavement, or where this inspection has been inadequate, defects will frequently develop in the pavement. Under these circumstances, it becomes necessary to examine the finished work in order to determine the reason for the defects or failures. In an inspection of this sort, careful note should be made of the condition of the surface and its contour. Frequently marked depressions occur where the pavement has been laid over a trench dug just prior to its construction, and in which the back-filling was not properly done. A thorough examination of the street will usually involve the cutting out of numbers of samples of the bituminous surface. These should be carefully marked as to location and a sufficient number of them taken to fairly represent the surface examined. They should be sent to a central