saving in maintenance charges and a great improvement in appearance may be made. On such streets a twenty-four feet roadway is ample and on hills even less may suffice. It is most important, economical and advantageous to make the roadway on a hill (especially a steep one) as narrow as traffic conditions will permit. The narrower the width the less danger there is of the roadway being washed out by rains. It can be well sprinkled in one trip of the street sprinkler, and that is absolutely necessary in hot weather to prevent horses from tearing or ravelling the surface. The area to be kept in repair is less, consequently the street appropriation will go farther.

On such streets usually a five or six feet sidewalk will accommodate pedestrians and the remaining space should be covered with grass. The sod after it gets a good start will not be washed out by rains and the damage done in such streets during storms will be lighter. A man with a scythe will keep in order miles of such parking (as it is called) while the same expenditure would not repair the damage sometimes caused by a single storm in one or two blocks of unnecessarily wide roadways. Not only is the cost maintenance less because there is less surface to wear out, but the first cost is less where the roadways are macadamized and where heavy general repairs are needed it pays to relocate the gutters and sidewalks.

This method of dividing and constructing streets makes it easier to work out a practicable cross section on streets running along a side hill. It is always desirable to have the roadway level instead of sidling and the difference in elevation between the upper and lower sidewalks may be all taken up in the parking on each side of the roadway leaving the latter so that vehicles do not tip sidewise in passing along.

Further improvement in appearance may be made by tree planting in the pathway.

The narrowing and parking of unnecessarily wide city and town streets has been receiving considerable attention from city and town engineers, but in towns where such officials are not employed the wide roadway is not unusual. The benefits to be obtained by the change suggested are quite generally recognized in engineering and aesthetic circles and are slowly dawning upon the minds of the general public.

In contrast, however, little thought even has been given to the hundreds of miles of our brush, weed, boulders and rubbish covered and unnecessarily wide country roadsides. Although a large percentage of the land along these highways is still of little value there are hundreds of miles of double highway strips taken out of valuable farm lands which are not only largely useless to-day but are actually breeding places for noxious weeds.

The time is rapidly coming, if it has not already arrived, when much of this roadside area ought to be devoted to useful purposes.

TESTING CEMENT FOR LOUISVILLE, KY., SEWERS.

Some practical interest attaches to the record of methods and results obtained in testing seven specified brands of cement used in the construction of the new sewerage system of Louisville, Ky. The details are given in the report of J. B. F. Breed, of Louisville, chief engineer, and Harrison P. Eddy, of Boston, consulting engineer. Early in the course of the construction work the Louisville Sewerage Commission established a cement-testing laboratory of its own, and the following results were obtained by the permanent staff:—

Cement-testing Methods.—The contracts provided that tests of cement should be made in accordance with the methods recommended by the Committee of the American Society of Civil Engineers on Uniform Tests of Cement, and that all cement should conform to the requirements adopted by the American Society of Civil Engineers, November 14th, 1904.

The minimum tensile strength required for Portland cement was fixed as follows:—

Neat Cement.	Strength.
24 hours in moist air	175 lbs.
7 days (one day in moist air, six days in water)	500 lbs.
28 days (one day in moist air, twenty-seven days in water)	600 lbs.
Mortar: One part cement, three parts sand.	
7 days (one day in moist air, six days in water)	175 lbs.
28 days (one day in moist air, twenty-seven days in water)	250 lbs.

Briquettes made for testing tensile strength were broken by a Fairbanks testing machine.

The average results of all tests are given in Table 1.

Cement Used.—From July 1st, 1908, until December 31st, 1909, 825 carloads, equivalent to 146,437 barrels of cement, have been sampled and tested.

Sampling.—Samples were taken in accordance with the recommendation of the said Committee of the American Society of Civil Engineers. Each lot of cement was tagged at the time samples were taken. The practice of tagging varied according to the character of the work and the location of storehouses and other conditions. Upon small work, where the cement was taken from the storehouse and delivered to the work in small lots, it was found advisable to tag each bag. This was done as the cement was unloaded from the car or the team into the storehouse, at which time samples were taken for the laboratory. After acceptance, cement was taken from the storehouse to the work as required, and the inspector upon the work, having been informed of the identification number of the lots which had been passed or rejected, knew from the tags upon the bags whether or not the cement had been tested and accepted. Upon the larger work, where the contractor stored his cement

TABLE I.

Cement Tested from July 1st, 1908, to December 1st, 1909.

Brands.	Carloads Tested.	FINENESS. Per Cent. Passing Through No. 100 Sieve.	No. 200 Sieve.	TENSILE STRENGTH.——(Pounds). 24 hrs.	Neat, 7 days.	28 days.	Mortars 1-3, 7 days.	28 days.	Specific Gravity.	Sulphuric Anhydride (SO_3), (per cent).
Alma	24	94.3	82.4	321	728	802	259	321	3.165	1.25
Bedford	58	92.7	78.1	315	718	786	266	355	3.122	1.45
Lehigh	168	93.3	78.2	336	766	836	257	332	3.130	1.43
Old Dominion	5	94.3	78.2	347	769	841	243	364	3.095	1.68
Kosmos	185	93.7	76.8	271	690	862	223	333	3.133	1.42
Speed	284	96.4	77.8	321	747	822	288	358	3.142	1.40
Superior	9	....	....	340	760	880	269	364	....	....