should be carefully investigated. In most cases it will be found to vary only between one and two times the average width of the prevailing type of vehicle, and in many other cases between one and several times the average width of each of the tire paths. The logical necessity for the consideration of the "maximum travelled width" in preference to the "entire width" of a roadway will be fully justified when it is considered that the unit "average tonnage per foot width of roadway" will give values far less than those given by the unit "average tonnage per foot of maximum travelled width of roadway."

For the purpose of the selection of a satisfactory type of roadway pavement for any given situation, it is also very necessary that the annual maintenance and the life cost (depreciation and interest on first cost) of the type of pavement under consideration per unit of traffic be known with some degree of certainty.

The most logical and satisfactory unit of traffic measurement yet proposed would seem to be the "ton-mile" or its multiples, such as "hundred-ton-mile," or "thousand-ton-mile." To obtain the actual ton-mile of traffic, the census figures that represent the maximum load should be reduced proportionately to give the average load.

The use of the "ton-mile" unit will not alter or render more difficult the general methods employed in the taking of traffic census data. It is only necessary that the observer be stationed in a block or stretch of highway of known length where every vehicle in passing the observation point must actually traverse a definite fractional part of a mile length of highway.

For the purpose of local comparison, it is seldom necessary to use more than one kind of traffic unit, but when it is desirable to provide data that may be compared with studies made in similar situations in other communities, any additional kinds of units that may be necessary should be used in order that the data may be reduced to comparable form.

Classification of Traffic .- As governed by the weights of vehicles and the characters of their tires, vehicular traffic should be divided into as many classifications as may be necessary to give fairly accurate results. In general, however, fourteen somewhat standard classifications have been proposed, which, while more or less arbitrary in determination, are nevertheless considered to be fairly representative of average traffic values. These several classifications are as follows:

Average weight

ually

Character	of	traffic.	in	short	tons.
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Classification.	
Horse-drawn-	

Horse-dr	awn—	6-
(1)	Horse without vehicle	.05
(2)	Light one-horse-drawn vehicle	1.20
	Heavy one-horse-drawn vehicle	2.00
(3)	Light two-horse-drawn vehicle	2.00
(4)	Heavy two-horse-drawn vehicle	4.00
(5)	Three horse-drawn vehicle	5.00
(0) (7)	Four-horse-drawn vehicle	6.00
Motor-d	riven—	
(8)	Motorcycle or bicycle	.15
- (0)	Two-passenger motor vehicle	1.30
(10)	Over two-passenger motor vehicle	2.30
(10)	Light freight motor truck	3.30
(11)	Medium freight motor truck	6.00
(12)	Heavy freight motor truck	8.50
(13)	Heavy Height motor much truck	in the second
Miscella	neous-	individual
(14)	Miscellaneous extra heavy traffic As	estimated

The terms "light," "medium" and "heavy," as used in these traffic classifications, are intended to indicate the maximum possible capacity of the vehicle and not the relative weight value of the load carried at the time of its observation. These classifications of traffic are only intended to serve for general purposes.

In determining the probable compressive, shearing and impact stresses produced in the pavement it will be necessary also to determine the maximum unit weights carried per inch effective width of tire. In this connection it should be noted that the several characters of tires in general use include both metal and smooth surfaced and non-skidding rubber tires of both the solid type and of the inflated type, and also caterpillar solid rubber tires and tires equipped with non-skidding devices.

Analysis of Traffic Census Data .-- The data compiled from a systematic census count taken each year as being representative of the average traffic conditions prevailing throughout the year makes it possible to estimate very closely the total probable tonnage carried during the entire year. This data, when considered in conjunction with the records of the total annual charges for depreciation and interest on first cost and maintenance costs and the average travelled widths of the pavements, will give the following analysis:

Traffic tonnage-

- (a) Total tons of traffic per year carried by the highway.
 - (b) Average tons of traffic per year per foot width of roadway pavement.
 - (c) Average tons of traffic per year per foot of maximum travelled width of roadway pavement.
 - (d) Total tonnage for life of pavement per foot width of roadway.
 - (e) Total tonnage for life of pavement per foot of maximum travelled width.

Ton-mile maintenance costs-

- (f) Annual charges for depreciation and maintenance cost per ton-mile of traffic.
- (g) Total charges for depreciation and maintenance cost per ton-mile for life of pavement.
- (h) Average ton-mile of traffic per I cent of charges for average annual cost of pavement.

This data will show definitely the relations that actually exist between the traffic service and the depreciation and the maintenance costs of the pavement, which constitutes a most important factor to be considered in the selection of a type of pavement.

In 1913 seventeen of the largest water consumers of Johnstown, N.Y., who were in the business of leather dress-ing, used a total of 49,846,215 gal. of water for that year, compared with its use during the year 1916 of 260,468,087 gal., or an increase of 366 per cent. These seventeen ser-vices use one-third of the total water from the city's three sources of continuous supply. sources of continuous supply.

Steel bars, plates and shapes have never sold higher in the history of the trade than the prices reported from Pitts' burg as put into effect recently by the Carnegie Steel Co. Bars and shapes were put Plates were advanced \$15 a ton. Bars and shapes were pup plates were advanced \$15 a ton. Bars and shapes were pup up \$7 a ton, making the quotations 3.35 cents a pound for bars and 3.75 cents for shapes. On March 12th wire products were lifted \$4 a ton, the entire development supplying the most spectacular week, so far as prices are concerned, since the current boom got under way. The enormous demand for the spectacular week are the more than the spectacular week are the spectacular week at the spectacular week are the spectacular week at the spectacular week are the spectacular week at the spectacular week at the spectacular week are the spectacular week at the ship plates from the yards at home and abroad has been the dominant factor in the plate price increase, and structural shapes have also been affected by the expanding ship huilding inductor building industry.

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