

because a particular highway has operating upon it all the surface cars consistent with either good transportation, or economy and subway construction should only be decided upon after other and less expensive means of furnishing additional transportation have been sufficiently studied to justify their inexpediency.

The enormous amount of traffic absolutely necessary to support expensive subway construction makes it incumbent upon those responsible for such expenditures to thoroughly satisfy themselves that the traffic offered and the conditions prevailing compel subway construction rather than the use of other arteries on the highway, or even private right-of-way construction on the surface.

From the commencement of operation of surface car service over a specific stretch of track, up to the time when such track is completely saturated with cars, the interest charges for the investment on this particular stretch of roadbed per passenger decreases as passengers and riding over same increase, and, therefore, up to the point of saturation, or up to the point when the total capacity of the roadbed is availed of, the greater number of passengers, the less expense for fixed charges per passenger.

On several properties in the United States there have been constructed high-speed underground thoroughfares, either as result of surface tracks having reached a point of saturation or as result of the demand of the public for more expeditious transportation. Immediately upon such construction taking place the fixed charges per passenger jump entirely out of proportion to what they were at the moment of surface track saturation, and ordinarily due to the nature of construction of the subway where it is necessary to build the same cross-section for a one-car train on fifteen minute headway, as is required for a 10-car train on a minute and a half headway, the fixed charges per passenger carried are entirely out of proportion to the ultimate capacity of the subway.

A marked example of the enormous investment necessary for construction of a subway is that of the Washington Street tunnel in Boston, built in 1908. The surface car tracks over the highway under which the Washington Street tunnel was constructed for a distance of approximately one mile represent an investment of approximately \$253,000, while the tunnel cost approximately nine and a half million dollars, which, by the way, so far as we are able to learn, is the most expensive mile of roadbed and track in the world, not excepting the Jungfrau Tunnel in Switzerland.

In other words, the transportation companies building or leasing subways have been compelled to meet the enormous fixed charge for comparatively small patronage and pay the same rent or interest, whether the demands of traffic require the operation of a few cars per hour or the maximum capacity of the subway.

In certain instances there has been no substantial increase in rate of patronage where rapid transit service has become necessary. That is, the rate of increase of passengers carried per annum is not materially changed upon the inauguration of rapid transit service.

Generally speaking, it is granted that the cost of operation per passenger capacity with trains in a subway is materially less than electric car service on the highway, but unless the load factor is such as to give an opportunity for use of a reasonable capacity of the subway throughout a large percentage of the twenty-four hours, the fixed charges per passenger considerably more than offset the reduction in operating expense per car passenger capacity.

The original basis of establishment of rate of fare was entirely without regard to enormous subway investments, with a right-of-way furnished by the community, and if as result of entirely changed conditions, such as the outgrowing of the highway capacity or the pressure of the community, it becomes necessary to construct expensive underground thoroughfares, then either the rate of fare must be changed to meet these changed conditions or the community as a whole, benefited as result of such subway must bear, in a measure at least, proportionately to the indirect benefits accruing, a certain portion of the fixed charges until such time, if ever, as the ultimate capacity of the tunnel is reached and the load factor more nearly approaches 100 per cent.

There can be no question of the equity of such an arrangement, for it has been established without question that upon the construction of the subway the complexion of the community served radically changes, property values increase, particularly in the outlying district, and rents are correspondingly raised by landlords.

There is no reason, therefore, why the patron renting a home in the community benefited should pay an increased rate of fare and at the same time pay increased rental for his home as a result of the landlord's values having been increased by the subway construction.

The effect upon capital of companies who are endeavoring to furnish adequate transportation facilities, and who are required to pay interest or rentals on enormous investments entirely out of proportion to revenue received, can be readily concluded, and the consistency of the arguments, as well as their equity, compel recognition to the extent that where investments of this character become necessary the community as a whole must be compelled to participate in the support of same. This has been well evidenced by the case in New York, where in the construction of the latest subways the city of New York contributes in part towards the investment and fixed charges until such time as the net earnings resulting from the operation of the subway permit, after proper charges of every character, including operation, depreciation, etc., of the company bearing same.

The construction of subways, which are nothing more nor less than public highways, differs from other similar public improvements, such as surface highways, sewers, water systems, park systems, etc., in that instead of being constructed from time to time in proportion to the degree to which its capacity is to be used it is necessary, due to the physical nature of tunnels to build them substantially as large and at as great an expense in the first instance as is necessary to provide for not only the immediate requirements, but for the requirements of several years in the future. In other words, State highways, Metropolitan waterworks, sewerage systems, State parks, etc., are built and added to from time to time, and the ability of the community to digest same governs very largely the rapidity with which such systems are enlarged. In the case of a subway, however, it costs so much per running foot to construct, and a cross-section is just as expensive construction for a one-car train run once an hour as for a ten-car train run on a minute and a half headway, or its ultimate use.

It is thoroughly unfair, therefore, that a street railway company should be called upon to pay the entire interest on such an investment when the demands of the traffic and the amount of business available requires at the moment only a small proportion of the total available capacity.