

combined pumped under medium as well as heavy traffic except in the loess area where pumping on soils having more than 45 per cent silt and clay was limited to the metropolitan and war plant traffic at Memphis.

Subgrade treatments consisting of 2 to 4 in.

of loose river sand mixed with the existing clay subgrades resulting in 4 to 6 in. compacted depths were studied on two projects in Tennessee. Where the sand and gravel content of the mixture was greater than 55 per cent of the total material, no pumping was found.

## REPORT OF COMMITTEE ON ORIGIN AND DESTINATION SURVEY TECHNIQUES

BY D. GRANT MICKLE

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In December, 1944, the Congress passed the Federal Aid Highway Act of 1944, which amended the Federal law so as to recognize the needs of urban highway development. The law makes Federal-aid funds available for projects in urban areas, and authorizes the designation of a National System of Interstate Highways which will be a network of limited mileage, connecting and penetrating the major centers of population.

These far-reaching changes in national policy are the result of 10 years of research carried on through the state highway planning surveys. Begun in 1935 by the various highway departments, in cooperation with the Public Roads Administration, the surveys made possible the writing of those two milestones in American highway history: "Toll Roads and Free Roads" (1939) and "Inter-regional Highways" (1944).

The studies were designed to inventory the nation's highway systems, mile by mile; to find out what services are rendered, who pays for the facilities, and to generate the factual data on which an orderly development of highways in accordance with needs can be charted.

The highway planning surveys were confined largely to rural highways and their usage. It is a paradox of our times that the studies which produced such extensive data on rural highways should be the ones to disclose the urgency of urban improvements where comparable factual information is not generally available.

Because of the high property values involved in improvements and the unusual lack of present street efficiency in urban areas, the need for data on the volume and characteristics of highway travel are especially acute. These data must point the way to the proper location and design of new city expressways, and the most efficient use of other traffic facilities. To meet this requirement, the Public Roads Administration, again working with the State highway departments, and also with city engineering or planning offices, began research on ways of determining, quickly and inexpensively, the travel habits of urban dwellers.

Late in 1943 the Traffic & Operations Department of the Highway Research Board appointed a project committee to study origin and destination survey techniques. This report briefly reviews the various methods used, and describes in some detail the results obtained to date. It is a report of the Project Committee of the Highway Research Board, and was prepared by its secretary, John T. Lynch, of Public Roads Administration, who drew heavily upon the results of many of the city traffic origin and destination surveys now under way. Every member of the committee assisted in the preparation of the report by providing data, valuable suggestions and critical review.

Enough already has been developed to show beyond doubt that data collected in good origin and destination studies are necessary not only in locating and designing new facilities properly, but also in providing more efficient use of present street and parking facilities. The information also is important in broad planning for future urban development, because of the close relationship between transportation in the city and its housing, schools, stores and other facilities.

During the coming months, more information will be developed from the cities in which surveys have been conducted, and in others not yet started. Refinements in survey techniques and additional uses for the data can be expected, so that this first report of the committee is a report of progress to date.

Members of the committee are:

LLOYD M. BRAFF	HARRY W. LOCHNER
JAMES S. BURCH	LADISLAS SEGOE
NATHAN CHERNIACK	I. S. SHATFUCK
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## ORIGIN AND DESTINATION SURVEYS IN URBAN AREAS

PREPARED BY JOHN T. LYNCH

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### SYNOPSIS

Origin and destination surveys have been made for many years in connection with studies for river crossings and city bypasses and the techniques for such surveys of comparatively limited scope are well developed. Generally, automobile drivers are interviewed at roadside stations and the results correlated with traffic counts.

The finding that all but a small percentage of the traffic approaching any of the larger cities is destined for the city itself shows that the greatest need is for adequate highways leading into the city rather than for bypasses. Because of the complexity of urban traffic, brought about by the influence of the street grid on the large traffic volumes, origin and destination surveys are especially needed, yet difficult to make by methods previously used.

The need for new techniques has become apparent, and in recent years a number of methods have been tried in different cities. Study of this experience leads to the conclusion that the method promising to give the most valuable information at the least cost is one based on interviews made in a representative sample of the dwelling units in the area, in which information is obtained concerning all of the travel for a day by all residents of the dwelling units, supplemented by information concerning trips by non-residents obtained at a cordon of stations at the outer limits of the area.

The home-interview method is especially adapted to studies under abnormal traffic conditions, because it provides the means for adjusting for the abnormalities. Studies of this type are now under way in 24 cities, and in a number of these, the work has progressed to the analysis stage. First results are confirming the value and the practicability of the method.

For many years, origin and destination surveys have been made at river crossings in connection with specific problems, such as the selection of the proper location for a new facility, the estimation of the traffic volumes which should be assumed in the design, and the