

Analyzing Traffic Engineering Problems in Small Cities

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According to the Public Roads Administration, traffic volume in 1946 was 4 percent greater than in 1941, the peak pre-war year. This is in line with the estimates of many that post-war traffic would rapidly return to pre-war proportions.

Accident experience has not been quite as bad as predicted two years ago. Many felt at that time that traffic deaths in the year following the war might actually exceed 40,000—the number which occurred during the peak year of 1941. Actually, records show that 33,500 were killed during 1946. On the basis of mileage driven, the mileage death rate was 21 percent less than the rate in 1941.

Although traffic deaths in 1946 were 17 percent more than in 1945, this increase occurred entirely in rural areas, with rural deaths increasing 35 percent as compared with 1945. For urban areas, traffic deaths were 7 percent less than in 1945.

Mr. Don Kennedy, Vice-President for Highways of the Automotive Safety Foundation, has predicted recently that traffic volume in 15 years will be 65 percent greater than in 1946. Since surveys show that half of all travel takes place on city streets, which make up only 10 percent of the total road mileage, it is apparent that city engineers and other city officials must prepare for substantial increases in traffic on their street systems.

Most cities today face the same problems of traffic congestion and accident prevention which they faced in the last year before the war. From the standpoint of traffic engineering, these may be grouped into six classifications, as follows:

1. *Inadequate Street Capacity.* Streets in business districts and many through streets are crowded to capacity.
2. *Lack of Parking Space.* Lack of places to park downtown is perhaps the major traffic problem facing communities today. Financing of off-street parking facilities is a stumbling block in many places.

3. *Intersection Controls.* Over half of all traffic accidents in cities occur at intersections. Turn restrictions, channelization, pedestrian islands, stop signs and traffic control signals, and elimination of view obstructions are among the tools used in treating intersections.
4. *Speed Control.* Speed zones, with special limits suited to road and traffic conditions, are needed on many sections of urban streets to supplement present business and residence district speed limits.
5. *Other Control Measures.* Other control measures which must be used properly to facilitate and safeguard traffic include one-way streets, warning signs, no passing zones, pavement markings, obstruction markings, etc.
6. *Pedestrian Protection.* Since between 60 and 70 percent of all persons killed in cities are pedestrians, the pedestrian should be taken into account in timing traffic signals, redesigning intersections, etc.

ENGINEERING STUDY NEEDED

Traffic engineering techniques have been developed for studying the problems listed above and for developing solutions which fit the needs at the various locations. These techniques should be applied by specialists, instead of basing solutions to traffic problems upon opinions, as has been done all too often in the past.

In other fields of engineering, city officials and the public recognize the need for specialists. In sanitary engineering, for example, specialists design the sewerage system only after careful study. Likewise, in traffic engineering, it is essential that the proper techniques be used for determining which types of remedies are appropriate for the conditions. Responsibility for traffic engineering needs to be definitely assigned to an engineer in the city government, the necessary budget and staff provided, and proper training given.

The report of the Committee on Engineering of the President's Highway Safety Conference has recommended the following:

1. For cities of over 100,000 population, a traffic engineering unit should be established in the city government, comparable with other divisions of the public works or other engineering departments.
2. In cities of from 50,000 to 100,000 population, there should be at least one full-time traffic engineer, with sufficient authority delegated to him for traffic engineering functions.

3. In cities below 50,000 population, the responsibility for traffic engineering functions should be delegated to an engineering official, such as the city engineer, head of the department of public works, or other employee in the engineering department, and opportunities should be given for this man to obtain necessary training and experience.

Reports of cities in the National Traffic Safety Contest for 1945 show that practically every city of over 250,000 population now has a traffic engineer. Forty percent of the cities in the population group from 100,000-250,000 population have appointed traffic engineers; while in the population group from 50,000-100,000, 13 percent report traffic engineers. In cities not having traffic engineers, the responsibility for traffic engineering has been assigned to someone in the engineering department in more than half the cases.

THINGS TO DO

Steps which can be taken in improving the traffic control and accident prevention system in smaller cities are listed below. These deal primarily with engineering matters, rather than with traffic law enforcement or public education, which also are essential parts of a balanced accident prevention program.

1. Assign the responsibility for traffic engineering functions to an engineer, and arrange for sufficient budget and staff assistance so that this man may do a proper job. If the man has not had training or experience in traffic engineering, arrange for such training (a two-week course in traffic engineering was held at the Georgia Institute of Technology on June 16-28, 1947).
2. Bring your traffic regulations and restrictions up to date and in step with present traffic conditions by modernizing your traffic ordinance. This may involve adopting an entirely new ordinance, based upon the Model Traffic Ordinance.* Engineering studies should be made to prepare up-to-date schedules of through streets, one-way streets, parking prohibitions and restrictions, and speed zones, which are usually incorporated in such an ordinance.

In Indiana, as in some other states, local officials may obtain assistance in making such studies by calling upon the state highway department. Obtaining this assistance not only aids in selecting through streets and other controls which suit the conditions, but also aids in training the local person assigned the traffic engineering responsibility.

3. Inventory your traffic signs, signals, and pavement markings to make sure that they are fully in conformance with the Uniform Standards as required by state law, and contained in the Indiana Manual of Traffic Control Devices. A schedule for replacement of non-standard signs with uniform signs can be established, along with a program of modernizing traffic control signals, if needed.
4. Set up the administrative procedures for centralizing traffic engineering functions under the traffic engineer, or engineer made responsible.
 - a. All complaints, suggestions, and evidences of high accident locations should be referred to the traffic engineer for study.
 - b. Plans for street improvements should be referred to the traffic engineer for checking from the standpoint of street capacity and safety.
 - c. The traffic engineer should be given an opportunity to review applications for permits for curb cuts, public and industrial building construction, etc., from the standpoint of street capacity and safety.
5. Establish and maintain schedules and records for routine activities, including the following:
 - a. Schedules for inspection, reconditioning and periodic maintenance of signs and signals.
 - b. Schedules for placing and maintaining pavement and other markings.
 - c. Records of traffic signs, play streets, loading zones, bus stops, hospital zones, etc.
6. Arrange for ready access to accident records, including spot maps and location files, so that this information may be used in studying locations.
7. Keep abreast of your traffic problems by studying any problems which may be developing. Periodically study high accident locations, parking conditions, pedestrian problems, and evidences of congestion, and check signal timing.

VALUE OF A TRAFFIC SURVEY

In more than 50 metropolitan areas, origin-and-destination traffic surveys are aiding the communities in locating express highways and in making plans for off-street parking facilities. Such surveys, conducted

* Available from the U. S. Public Roads Administration, Washington.

in cooperation with the state and federal agencies, have been very productive in planning long-range programs.

Other traffic surveys are of value primarily to aid in bringing traffic regulations and restrictions up to date. They can aid also in providing some training for the engineer in the city who has been assigned responsibility for traffic engineering functions. Their value is limited, however, if no one in the city is being trained to carry on traffic engineering functions on a continuing basis after completion of a survey.

OUTSIDE ASSISTANCE

Engineers of the Indiana State Highway Department are in a position to be of assistance to officials of communities in Indiana in studying their traffic problems. This is particularly true in connection with assisting cities in bringing their regulations and restrictions up to date for incorporation in a revised traffic ordinance. It is preferable, however, that this assistance be given only in those cities which assign responsibility for traffic engineering functions to someone in the city, so that the highway department assistance can aid in training the local men to carry on the traffic engineering functions.

Some communities may desire to obtain part-time consultants on a continuing basis, to aid local officials in reaching solutions for their traffic problems. Such an arrangement would permit several small cities to have available the part-time services of a highly-trained traffic engineering specialist. This set-up should aid local officials materially not only in setting up study procedures and interpreting data, but also in selling the resulting recommendations to the city council.

NATIONAL SAFETY COUNCIL ASSISTANCE

At present, the National Safety Council is giving major attention to preparing analyses of information on the reports which cities submit to the Council in the National Traffic Safety Contest. This information deals not only with traffic engineering administration and activities, but also with work done in traffic law enforcement, keeping and using accident records, school safety, and public information.

The information submitted on the reports by the cities is tabulated by the Council's engineers, and rates are computed on the basis of population for cities of comparable size. A city then may request that an analysis be prepared of its accident prevention activities as reported.

The analysis then is prepared for the city, with comparisons made for each item of the city's performance with that performance which

would be needed for the city to rank among the leading 30 percent of cities in its population group. The analysis then is presented either by a Council engineer or by the cooperating state people—in Indiana by representatives of the Indiana Traffic Safety Commission. The analyses deal primarily with the administrative aspects of traffic management and control, and stress the need for assigning responsibility for each of the three aspects of traffic accident prevention.

I hope that every city in Indiana of over 10,000 population will request this analysis service. It may be requested through the Indiana Traffic Safety Commission.

In many instances, following an analyses presentation, requests are made for more detailed studies of traffic engineering features, such as locating of through streets and studying high accident locations. In such instances, the city officials are referred to the appropriate state department—in Indiana, to the Indiana State Highway Department.

In conclusion, may I point out that the Indiana State Highway Department has assigned specialists to work with cities in helping them in studying and solving their traffic problems. I hope that the cities in Indiana will take advantage of these services.