Better Utilization of City Streets

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CITY STREETS ARE BIG BUSINESS

City streets in this country represent an annual capital outlay of $3.133 billion, based on 1966 data. This figure is more than one-third of the total annual capital outlay for all streets and highways, $9.123 billion.

Another $1.114 billion was spent annually for maintenance of city streets, so $4.247 billion was spent each year on city streets.

Of this total $4 billion, $2.5 billion went to municipal extensions of state highways and $1.759 billion to other municipal roads and streets.

These figures are cited only to show that the subject of city streets is big business. Any discussion of making better use of a product which costs as much as this one does is obviously a worthwhile endeavor.

Looking at Indiana, the capital outlay total is over $50 million, and the maintenance figure almost $20 million. These are 1965 data, but the level presumably has not changed greatly and this is "big money" which we are discussing.

URBAN GROWTH

These major expenditures are due, of course, to factors which are obvious to all of us, but which can be summarized by the term "urban growth." Specifically:

(1) During the last decade, the growth of our country has been entirely in urban areas, with the rural population actually decreasing during this period. We have now passed the 200 million mark, and the estimates are that by 1985 we will be a nation of 262 million people, with most, if not all of the increase, being in the urban areas.

(2) In the last decade, while deaths from traffic accidents increased about 17 percent in rural areas, the increase was about 60 percent in urban areas. The rural rate went down about 14 percent, but the urban rate went up about three percent.
(3) Congestion in urban areas has increased, despite much new construction and many improvements to existing streets. It is difficult to put a quantitative value on this, but every driver in an urban area, large or small, knows that the situation is not improving, and, in most cities, that it is actually worsening.

(4) Finally, although new freeway construction has helped, and will provide more help in the future when additional new facilities are constructed, freeways will not solve the problem. After completion of the interstate system, for example, it is estimated that 80 percent of the vehicle-miles will be rolled up on conventional streets and roads with only 20 percent of the total being handled on the interstate system. Thus the problem is going to continue to be with us, and we as engineers and administrators have the responsibility to do something about it.

The problem is doubled-barreled, involving both congestion and accidents. Research indicates that the accident rate tends to increase with higher volumes of traffic, and the combination of more people in urban areas and greater use of motor vehicles by those people has resulted in an increase in vehicle-miles of travel in many urban areas which is more than twice the rate of population growth. It is an inescapable fact that our whole way of life today is oriented to the motor vehicle—in the plainest terms, we drive more. As a result, we have more traffic congestion and more traffic accidents.

The current situation, plus the forecast of more people and more traffic in urban areas, would seem to suggest a gloomy picture for the years ahead. Traffic and highway engineers, however, believe that the situation can be improved. The task is admittedly not an easy one, and it will challenge the best imagination of those in many disciplines.

CONTROL OF URBAN TRAFFIC

An ultimate program to control urban traffic sufficiently to prevent or even to reduce substantially present congestion and accidents would require control over four elements: (1) land use arrangement and density, (2) parking, (3) public transportation and (4) streets and highways. It is unfortunate but true that no single unit of government at any level—federal, state or local—has complete authority over all four of these aspects of the problem. There is need therefore to bring these interdependent variables into a more harmonious relationship.

Land Use Planning and Zoning

In the case of land use planning and zoning, a major stride forward has been taken with the organization of the urban transportation studies
being conducted in communities of over 50,000 population. Hopefully, as time goes on the coordination of land use planning with transportation planning under the urban transportation studies will produce greater harmony and balance between the spatial arrangement and density of land uses in an urban area and the transportation system. But inasmuch as land use planning is the responsibility of local government, there is little more that the highway agencies can accomplish independently along this line.

Parking

The second element, parking, at present is also somewhat out of reach of the highway agencies. Though much more can and should be done by highway agencies to relate roads and streets, particularly freeways, directly to parking facilities, this presently can only be accomplished through cooperation and persuasion. Neither the Bureau of Public Roads nor any state highway department presently has legal authority in the parking area sufficient to exert a major influence over this element.

Public Transportation

With respect to the third element, public transportation, highway agencies do have a potential for a significant influence though certainly it would be exaggerated to call this a controlling influence. The urban transportation planning studies provide an opportunity for closer coordination between public transportation and street and highway planning. But most important of all, the improvements made to streets and highways themselves affect the efficiency of the chief form of public transportation existing in most cities, namely bus transportation. For this reason highway agencies exert a greater influence over the element than is generally realized. By providing for expeditious traffic movement on streets and highways, bus transit is made more attractive and more efficient.

More Efficient Use of Streets and Highways

Thus, improvements in the efficiency of the street and highway system, item (4) on the list, benefit bus transit as well as private automobile and trucks. Furthermore it is on this particular aspect of the problem that highway agencies presently have both authority and special competence to accomplish further improvement. In addition, there is persuasive evidence to show that substantial accomplishment is possible in raising the traffic-carrying capacity of streets through a comprehensive application of traffic engineering methods and improvements on an areawide basis.
THE TOPICS PROGRAM

This then is the basis for the TOPICS program, which was first announced in February of last year.

**TOPICS Defined**

TOPICS stands for “Traffic Operations Program to Increase Capacity and Safety.” This is a program of the Bureau of Public Roads designed to assist in achieving better utilization of urban arterial streets and thus to reduce accidents and congestion.

**Streets Eligible for Federal Money**

Federal highway funds can be spent only on streets and highways which are designated as being on the federal-aid system. There are actually two federal-aid systems—the federal-aid primary system and the federal-aid secondary system. There is actually no federal-aid urban system as such, and federal-aid routes within urban areas are extensions or connections of the federal-aid routes in rural areas. These federal-aid routes in urban areas do not constitute a great mileage, and thus a relatively small proportion of urban streets has been eligible for financial assistance from federal highway funds.

The TOPICS program is a policy determination which makes possible the designation of additional miles of streets as part of the federal-aid primary system in urban areas. Federal-aid funds may thus be expended on this additional mileage for certain specified types of traffic operation improvements. The streets thus added are classed as the Type Two Primary System. Eligible communities are those of 5,000 or more population.

**Types of Improvements for Streets**

Streets which can be included in this supplemental system are urban arterials and streets in the central business district or in major outlying business districts. The improvements which can be made on these streets are limited to the kinds of things which will improve operations—improvement of signal systems, channelization, pavement markings, signing, bus and truck loading and unloading bays or other facilities, extra turning lanes at intersections, installation of reversible lanes and the control system for such reversible lanes, installation or upgrading of highway lighting and, where necessary to relieve a crucial bottleneck, the construction of a grade separation structure, pedestrian, vehicle or railroad. Also eligible would be a traffic surveillance system, including a data collection and analysis center, where traffic flow measurements and accident data are continuously evaluated to identify
locations at which corrective action is needed. This could conceivably go so far as to include a real-time system of considerable sophistication.

*What TOPICS Is Not*

It is perhaps important to state here what the TOPICS program is not. It is not a grant program for cities, because it is part of the regular federal-aid highway program and projects under this program must be developed and scheduled just as any other federal-aid highway project is handled, through the state highway departments. It is not bringing additional money to the state, because no new funds are available, and the cost of the improvements under the TOPICS program must be paid for out of funds which are regularly apportioned to the state for highway purposes (the funds commonly referred to as ABC funds).

**IMPLEMENTING A TOPICS PROGRAM**

In carrying out a TOPICS program, once an understanding has been reached with the state highway department, the first step involves any inventory of existing facilities and the development of the new Type Two Federal-Aid Primary System. This may or may not involve some adjustments in existing federal-aid routes in the urban area. The development of the system, however, must be coordinated with any on-going urban transportation plan. In cities over 50,000 population, where the urban transportation planning process is already going forward as required by law, close cooperation must exist between the planning team and those developing the TOPICS program.

It is worth noting at this point that in many cities the urban transportation planning process has probably already done much of the preliminary work necessary for a TOPICS program. In fact, in many cases there exists a so-called “Immediate Action Program” which can form the basis for a TOPICS program.

*Planning Program of Improvement*

Once the inventory and planning stages have been completed and the Type Two System has been identified and approved, the next step is that of planning a program of improvements. This is to be a relatively short range program, perhaps five years, and must include an estimate of the cost as well as a time schedule for carrying it out. The plan should represent a coordinated effort by all levels of government to improve the traffic operational characteristics of the street and highway network.
Adequate Enforcement of Traffic Laws

There are at least two other aspects of the TOPICS program which must be mentioned. First, as pointed out earlier, it is necessary to recognize that physical improvements do not always guarantee by themselves improved traffic operations, and the regulation of traffic on the basis of adequate legal requirements which are properly enforced is a necessary feature of any TOPICS program. Advance agreement by the state and city on this point is required.

Traffic Engineer to Oversee Improvements

Secondly, and of considerable significance to traffic engineers and the traffic engineering profession, is the requirement for an agreement by the city that adequate provisions will be made for the proper and adequate maintenance of the improvements. This has the effect of requiring that traffic engineering competency be made available to oversee the completed improvements. This may mean a staff position in the city government, or it may mean some other method of developing this competence, perhaps involving the use of a consultant on a retaining fee basis or obtaining the necessary traffic engineering service from the state highway department.

CITIES NOW IN TOPICS PROGRAM

At present, 19 cities are engaged in TOPICS programs in a formal fashion. As might be expected, they come in all sizes and styles. Populations of the cities, which are shown in the attached table, range from a low of 8,000 in Searcy to a high of 984,000 in the metropolitan area of Indianapolis. One of the cities, Stamford, is actually a part of the 10 million population in the tri-state urbanized area surrounding New York City.

The locations of the 19 cities are varied but are concentrated primarily in the eastern part of the United States. This may be due to the more heavily urbanized conditions of the east which establishes a climate for the need of a TOPICS program which is more readily appreciated.

Four cities (Kokomo, Charlotte, Peoria, Indianapolis) are presently organizing to prepare the comprehensive base study that is necessary; six more (Morgantown, Augusta, Orlando, Charlestown, Searcy, Lancaster) have begun the study; three (Wellesley, Canton, Memphis) have basically completed the study and are working on a draft of the report; four (Huntsville, Rutland, Lincoln, Stamford) have submitted an initial report to the bureau; and two cities (Woonsocket and Dover-
Some city traffic engineers have completed the report. No city has as yet put a project under contract, but three have programmed federal-aid projects for preliminary engineering for design and the design is underway. Although not reported, we understand that at least one city has begun implementation of suggested projects prior to completion of the report.

Some Studies by Consultants

Eight of the TOPICS studies are being prepared by a consultant; three by the state; two by a combination of the city and consultant; one by the city traffic engineering department; four by a combination of the state and consultant; and one by a combination of the state and city. In all of the studies actual city-state cooperation is being attained in the TOPICS program.

Some Cities Use Staff Traffic Engineers

As a matter of interest, nine of the 19 cities are being conducted in cities that presently have a professional traffic engineering department. Two more cities are planning to set up such departments as a result of the TOPICS program.

Use of Federal Funds Starts End of 1968

Although no city has as yet begun project implementation using federal-aid funds, we expect that at least seven and possibly nine will begin some implementation before the end of 1968, and roughly estimate at least two million dollars will be authorized for that purpose this year.

CONCLUSION

With the TOPICS program, the Bureau of Public Roads and the state highway departments are entering a new phase of the overall task of improving our nation's transportation system. They are taking what is confidently expected to be a meaningful step to meet the needs which have been and will be created by an explosion—a peaceful one, but one of equal or greater impact than the first atomic one.
<table>
<thead>
<tr>
<th>TOPICS City</th>
<th>Source Used in Preparation of Study</th>
<th>Study Prepared By</th>
<th>Improvements to be Maintained By</th>
<th>Major Improvement Types</th>
<th>Current status</th>
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</thead>
<tbody>
<tr>
<td>Stamford, Connecticut</td>
<td>New study: Some background data obtained from Tri-State Metro Study. PE Funds.</td>
<td>Consultant: Wilbur Smith</td>
<td>Now handled by Chief of Police. Will have to be determined.</td>
<td>Signalization, channelization, parking restrictions.</td>
<td>Draft reviewed by Division and Region.</td>
</tr>
<tr>
<td>Augusta-Gardiner, Maine</td>
<td>New study: Background data from Area Transp. Study. PE Funds.</td>
<td>Maine Highway Commission</td>
<td>Augusta City Traffic Engineer</td>
<td>Signalization, elimination of two rotaries, elimination of parking.</td>
<td>Rough draft by Augusta. Improvements to be spread over 5-year period and could begin late this year.</td>
</tr>
<tr>
<td>Wellesley, Massachusetts</td>
<td>Improvements recommended in 1960 and 1964 Bruce Campbell Transp. Study (Previous Study).</td>
<td>Update by state and consultant.</td>
<td>Wellesley Department of Public Works</td>
<td>Signalization, interconnected signals and channelization.</td>
<td>Division has approved Type II System. Additional study needed.</td>
</tr>
<tr>
<td>Woonsocket, Rhode Island</td>
<td>New study: Data obtained in part from previous study. PE Funds.</td>
<td>State-wide Planning Program. Designed by consultant.</td>
<td>Traffic engineer or consultant on continuing contract</td>
<td>Signalization, channelization, parking restrictions.</td>
<td>Design 80 percent complete. Let to contract this spring.</td>
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<td>Source Used in Preparation of Study</td>
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<td>Canton, Ohio 356,000</td>
<td>New study: Background data was obtained from Transp. Study, PE Funds.</td>
<td>Ohio Department of Highways</td>
<td>City traffic engineer</td>
<td>Phase 1—signalization, interconnect signals, parking restrictions.</td>
<td>1st phase—core area. Draft report being revised.</td>
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<td>Phase 2—channelization, outlying areas.</td>
<td>2nd phase—draft due in late summer this yr.</td>
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<td>Lancaster, Pennsylvania 289,000</td>
<td>New study: Some data can be used from Transportation Plan, HPR.</td>
<td>Consultant: Alan Voorhees</td>
<td>City traffic engineer</td>
<td>Report not far enough along to determine.</td>
<td>Data collection complete. Just begun analysis phase. Draft report due in Nov.</td>
</tr>
<tr>
<td>Charleston, West Virginia 85,000</td>
<td>New study: Some data used from Transportation Plan, HPR.</td>
<td>State will gather information. Consultant to analyze and recommend.</td>
<td>City traffic engineer</td>
<td>Not far enough along in study to determine.</td>
<td>Consultant agreement signed.</td>
</tr>
<tr>
<td>Orlando, Florida 372,000</td>
<td>New study: Much data can be obtained from Transp. Study, HPR.</td>
<td>State will possibly retain consultant.</td>
<td>City traffic engineer</td>
<td>Not far enough along to determine.</td>
<td>State has almost completed the study prospectus.</td>
</tr>
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<td>Charlotte, North Carolina 272,000</td>
<td>New Study: Some data from Transp. Plan. HPR.</td>
<td>City will perform study but plans to use consultant on some phases.</td>
<td>City traffic engineer</td>
<td>Study has not progressed far enough along to determine.</td>
<td>Consultant selected as subcontract by city.</td>
</tr>
<tr>
<td>Memphis, Tennessee 740,000</td>
<td>New study, but will be included in overall Transp. Study. HPR.</td>
<td>Consultant: Harland Bartholomew</td>
<td>City traffic engineer</td>
<td>Signallization, removal of parking, reorganization of city's responsibilities.</td>
<td>Draft due April.</td>
</tr>
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<td>Peoria, Illinois 127,000</td>
<td>New study: Background data from Transp. Study. HPR.</td>
<td>City will hire consultant.</td>
<td>City engineer</td>
<td>Not yet determined.</td>
<td>Copy of city-state agreement reviewed by all.</td>
</tr>
<tr>
<td>Indianapolis, Indiana 984,000</td>
<td>New study: Background data from Transp. Study. HPR.</td>
<td>Undecided. Either MTA or consultant or both.</td>
<td>Mass Transportation Authority</td>
<td>Not far enough along to determine.</td>
<td>MTA is developing work plan and deciding on how to handle study.</td>
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<td>Kokomo, Indiana 50,000</td>
<td>New study. HPR.</td>
<td>City may hire consultant.</td>
<td>Unknown.</td>
<td>Not far enough along to determine.</td>
<td>Consultant agreement signed.</td>
</tr>
<tr>
<td>Lincoln, Nebraska 161,000</td>
<td>New study: Background data from Urban Transp. Study. HPR.</td>
<td>City</td>
<td>City traffic engineer</td>
<td>Signalization, channelization, lighting.</td>
<td>Rewriting TOPICS draft copy.</td>
</tr>
<tr>
<td>Searcy, Arkansas 8,000</td>
<td>New study: City and state will collect all data. HPR.</td>
<td>State and city</td>
<td>Unknown.</td>
<td>Unknown.</td>
<td>City-state agreement signed.</td>
</tr>
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* Janesville, Wisconsin, and Worcester, Massachusetts, have proposals in to be considered as future TOPICS cities, and in all probability will be approved as 20 and 21 cities.