"DEPARTMENT OF HIGHWAYS ASSISTANCE AVAILABLE IN ESTABLISHING CITY TRAFFIC PATTERNS"

WILLIAM GALLOWAY
Traffic Engineer
Kentucky Department of Highways

The Need for New Traffic Systems—Throughout the Highway Conference and during this particular session, we have heard many references to the Interstate System. It is indeed proper that we again consider the Interstate System of Highways when we discuss the establishment of new city traffic patterns, for it is a certainty that this new highway system will create major changes in many of today's urban traffic patterns. We have reason to believe that many cities whose major traffic movements are now, for example, north-south in direction, will upon completion of nearby Interstate facilities, witness the change of this traffic flow to an east-west direction. In other cases, we expect that the completion of the Interstate System will create additional traffic volumes on our already crowded urban streets. Frequently, financial limitations will not allow the reconstruction of these urban streets to standards which would be desirable for the increased traffic volumes that they must carry. We see, therefore, the absolute necessity in these cases of obtaining the last ounce of capacity and utility from these facilities by operating them in the most efficient manner possible. Such operation will undoubtedly demand the establishment of completely new traffic patterns.

Even in those urban areas that will not be directly affected by the Interstate System we frequently witness periods of intense traffic congestion. The direct result of this condition is always unnecessary driver harassment and unnecessary hazard for both motorists and pedestrians. Our urban areas feel the indirect result of traffic congestion, particularly in the downtown area by the development of suburban shopping centers which operate in direct competition with the downtown shopping center. The effect of this condition upon the economy of the downtown area is well known to all of us.

Immediate and Long Range Programs—The Department of Highways recognizes that the need for new traffic systems has ramifications both in the immediate future and in the distant future. The goals for both our immediate and long range programs can be stated simply as less congestion and improved safety. Our methods of achieving these goals, however, are in many cases totally different. Whereas our long range program may attempt to relieve downtown congestion by development of limited access by-passes, our immediate program strives to achieve this goal by the creation of greater street and intersection capacities on our existing street systems. Through our long range program we envisage the improvement of our street systems by the creation of new streets and the widening of older streets. We attempt to accomplish this goal in our immediate program, however, by the adoption of more efficient routing plans and by the control of parking. In both of our programs, however, we recognize the need for improved local ordinances and enforcement regarding speed zones, parking, double parking, and loading, and encroachments onto public right of way by private and commercial developers. We further recognize that for either of these programs to be effective, every possible attempt must be made to obtain better public understanding and education with regard to our traffic problems.

The Role of the Department of Highways—In determining these immediate and long range goals, we in the Department of Highways have endeavored to define the role and responsibilities which we must assume in solving these urban traffic problems. Since the majority of our operating funds result directly from
motor vehicle use taxes, it is clear that our primary responsibility is to the motorist rather than to this same individual as a businessman or a resident. This is not to say, however, that we can or do ignore business or residential problems related to traffic. We believe further that our responsibility extends to the motorist during all phases of his trip. This, of course, includes his travel in urban areas as well as rural areas, his travel on the primary and secondary state maintained systems as well as the county and municipal road and street system, and includes even some degree of concern about his ability to park his car at his destination. We are concerned not only with his safety, but with the convenience and expeditiousness of his travel.

Since by statute, the Department has assumed the primary responsibility for the maintenance and operation of the state maintained highway and street system, our direct efforts and expenditures must be confined to that system. We recognize, however, that the strict observance of this limitation would result in chaotic conditions on the important, but non-state maintained city and county feeder and service routes. Although our direct participation in the cost of improvements on non-state maintained facilities is prohibited by law, we do as a matter of policy, frequently act in an advisory capacity in the improvement of these facilities. Before going into the direct services that are offered to you by the Department of Highways on state maintained facilities, let me assure you that our interests extend beyond this system and that we are always happy to provide advisory service to you regarding problems on your city-maintained city streets.

Long Range Assistance—The first and probably most important service that is available to you from the Department has already been discussed by Mr. Cutler in his review of this year's activities in the urban highway program. In this program, every attempt is made to determine the long range needs of all urban areas in the state and to initiate work on these improvements. I am sure Mr. Cutler will agree that of prime importance in his work are the origin and destination surveys undertaken by the Planning Division of the Department. These origin and destination surveys have been made in many Kentucky cities of which Lexington, Paducah, Corbin, Danville, Mt. Sterling and Glasgow serve as good examples. At present, these surveys normally include only corridor traffic counts which indicate the percentages of through and local vehicles and are used to determine the relative need for by-pass routes. Plans are under way, however, for expanding this program to include the use of postcard surveys so as to obtain an accurate picture of traffic movements inside the urban areas. As you might imagine, these origin and destination surveys are rather complex operations and require considerable man hours. It is necessary, therefore, that the Department limit the number of such surveys to approximately ten per year. Although this service is available for all major urban areas, I would imagine that a backlog of requests for these surveys exist and that a system of priorities of some type has been developed.

Immediate Assistance—Aside from the assistance that is available to you in the urban program of the Department, I expect that you will be primarily interested in the services provided by the Department’s Division of Traffic. This Division is probably more directly concerned than any other Highway Department Division in obtaining the highest degree of traffic efficiency possible from our existing streets and highways through operational measures rather than through construction. No doubt you are familiar with many of the tools used by the Division of Traffic, examples of which are the installation of signs, signals and markings, and channelizing islands, the initiation of truck routes, and of changes in parking and loading practices, the installation of one-way streets and the establishment of speed zones. I refer to these improvements as tools because each is applied for a different purpose and can be expected to produce the desired results only if correctly applied.

Signs and Pavement Markings—Although traffic signing and pavement marking must be considered basic in the installation and operation of efficient urban traffic systems, we seldom hear reference made to these devices other than to
describe their inadequacies in particular cases. We in Kentucky are more fortunate
than most states in that these criticisms are few and becoming even less frequent.
Certainly, every effort is being made by our Division of Traffic to eliminate
signing and marking inadequacies in our urban areas. To accomplish this, we are
spending approximately 30 percent of our annual signing and pavement marking
budget in urban areas even though only 5 percentage of our state maintained
facilities are in urban areas. We expect that these expenditures for signs and
markings in urban areas will continue to rise as required by the increased problems
in those areas.

Traffic Signals—I should dwell momentarily on the subject of traffic signals.
We are constantly reminded that traffic signals are perhaps the most popular
neighborhood form of traffic control in urban areas. We are also frequently
reminded that this view is not necessarily shared by those motorists of other
neighborhoods. Indeed it frequently seems to us that the view shared by all with
regard to traffic signals is that if the signal stops someone else for you it is good,
but if it stops you for someone else it is not good. To help guarantee that this
most important tool is not misused, we have developed engineering warrants to
help us determine if a signal at any particular location would be beneficial or
detrimental. As might be expected, we find in a great many instances that a
traffic signal would be detrimental and that another traffic control device would
be beneficial. Not withstanding this factor, we managed in 1958 to spend on
signal installations, a total of $187,720.00 of which approximately 75% was spent
in urban areas. In 1959, we expect to spend approximately $206,500.00 for these
installations. Much of the 1958 signal installation fund was spent on replacing
obsolete signals with modern flexible type equipment. Much of this equipment
was of the actuated type which can sense the relative need for green time on the
intersection approaches and apportion the time accordingly. A large portion of
these funds were spent on converting closely spaced obsolete signals that operated
on an individual basis with modern signal systems which operate one in conjunc-
tion with the other. With such equipment, it is usually possible for us to so arrange
the occurrence of red signal indications at various intersections along a major street
so that the major street traffic will be stopped a minimum number of times. We
are at the present time installing such a system in the City of Winchester and are
beginning a rather large program of this nature in the City of Covington. Numer-
cous other installations of this nature have been made, examples of which are
Hopkinsville, Bowling Green, Maysville, Newport, Shelbyville and Ashland.

Channelization—Another traffic engineering tool that appears to be gaining in
popularity is the traffic island. These islands which are used for the purpose of
providing separate channels for different traffic and pedestrian movements may
take on many forms. Probably the most familiar form is the use of an island to
create a separate lane for left turning vehicles so that these stopped vehicles will
not impede the flow of through traffic at the intersection. Other islands may be
used to block unsafe or undesirable turning movements, to provide a haven of
refuge for pedestrians, or to provide protected locations for other necessary traffic
control devices such as signs or signals. Perhaps the most important use of these
islands, however, is for the positive separation of conflicting traffic streams that, in
the absence of such islands, would be vulnerable to head-on, side-swipe or right
angle collisions.

Parking Controls—Frequently during follow up checks of many of the pro-
gressive signal systems which we have installed as just described, we have noticed
that the benefits of this progressive signal system are not being fully realized
because traffic is being stopped by double parked vehicles, loading vehicles or by
vehicles entering or leaving parking spaces. This condition was, of course, not
noticed before the signal system was installed because the traffic was being stopped
at each of the individual traffic signals. In these instances, we have found that
almost as much delay was being experienced as before the new system was im-
stalled, because these parking activities were not allowing the platoons of cars to reach the signalized intersections at the proper time. Consequently, it has often been necessary for us to make changes in parking and loading practices in order to assure that the new signal system will function properly.

Occasionally, we find that the traffic volumes at a particular intersection are so great that even the most elaborate signal equipment could not possibly provide an acceptable degree of relief. In these cases, the only alternative available is the development of additional lanes for traffic movement either by the removal of parking or by the operation of the street as the one-way street, which will be discussed later. Normally, the elimination or limitation of parking on a major scale will require the adjustment of parking practices in other portions of the city. Wherever possible, therefore, we attempt to study the overall parking situation within the urban area to determine those changes which are required by the new traffic system and to determine the other adjustments which must be made to counteract these changes. In performing urban work of this kind, we invariably find that the removal of parking spaces in the highly congested downtown area can be more than compensated for by the establishment of parking time limits on those streets immediately adjacent to the downtown area. Frequently, however, such a change results in unacceptable walking distances for the patrons of downtown stores, and it is sometimes necessary therefore, to recommend that the urban area consider the provision of off street parking spaces in the downtown area.

One-Way Systems—A few moments ago I mentioned to you the frequent necessity of establishing one-way flow on urban streets as a method of improving the capacity of these streets. Usually, we expect that any street operated one-way can accommodate more than one and one-half times the volume of traffic that the same street could accommodate if operated two ways. Not only can these additional traffic volumes operate under one-way flow but the traffic movements themselves invariably operate with a much greater degree of safety and with less confusion.

Needless to say, one way systems always require major changes in travel habits and can frequently result in additional travel distances within the urban area. As might be expected, we experienced considerable local opposition to one-way systems during the first few years of their application. For sometime now, however, we have encountered little or no opposition to these systems since their benefits are readily apparent and since the public has accepted the tremendous improvements that can be obtained through one-way operation. At the present time, we have successful one-way systems operating in more than thirty of Kentucky's major cities.

As is the case with all traffic improvements, one-way systems have only one intended purpose. We are constantly aware that a misused one-way system can result in far greater harm than good and we are, of course, opposed to the indiscriminate use of this form of traffic control. Undoubtedly this accounts for the fact that we have never had to revert to two-way operation on any of our one-way systems because of continued local requests.

Truck Routes—In several instances we have been able to improve traffic conditions by the installation of a truck route. Frequently, however, we must reject requests that truck routes be established on existing street facilities due to the inadequacies of these facilities. As you might expect, good pavement surface and sub-surface dionsitions, gentle curvature, and glades and adequate pavement widths are required for the successful operation of a truck route.

Speed Zones—One other major service provided by the Division of Traffic in which I am sure you will be interested is our work in speed zoning. We presently employ a full time radar speed meter operator and during the past year installed or modified twenty-three speed zones. It has been proven conclusively throughout the nation that realistic speed zones not only result in improved safety but also result in increased enforcement effectiveness. In order that we may be
certain that the speed zones which we do establish are truly realistic, our radar speed meter is used to precisely determine the speeds of a representative sample of the motorists through the zones. These surveys invariably reveal that the great majority of motorists are travelling at a safe speed. The speed limit which is established must not, of course, make violators of these motorists. When realistic speed zones are set in this manner, it is comparatively easy for enforcement officials to deal with the relatively small number of flagrant violators.

In summary, the services provided to you by the Department in establishing new traffic patterns are of both an immediate and long range nature. The long range improvements normally involve the construction or reconstruction of important streets and highway and the immediate improvements consist of the installation of signs, signals and markings, the installation and operation of one-way systems and truck routes, the installation of speed zones and channelizing islands. In addition to these services which are available from the Department on state maintained routes, we are prepared to provide advisory services to you on your city maintained streets. To obtain these services, you need only contact the Department of Highways or you may wish to contact the Division of Traffic directly.

Before closing, I should like to describe briefly our policies with regard to the provision of many of these services. When we are requested to make comprehensive surveys to determine major traffic improvements that may be needed in an urban area, such as new signal systems, one-way systems, major parking revisions, or combinations of all of these, it is our policy to require that the city agree to accept all our recommendations for a trial period of approximately 6 months. We have found that this policy is desirable to allow these new systems and changes which are frequently labeled “bitter pills” to be sold to the public. Also during this trial period, adjustments may be made to overcome unforeseen difficulties. Usually, the transition of these improvements from a trial to a permanent status, because of their public acceptance, is so smooth that it goes unnoticed.