

Uniform Traffic Control Devices For Cities and Counties

GEORGE W. HOWIE
Transportation Engineer
De Leuw, Cather & Associates
New York City

INTRODUCTION

The best approach to discussing the problems of uniformity of traffic control devices for cities and counties is to go back to the newspaper man's traditional "who, what, when, where and why." In somewhat reverse order—"why uniformity?" The answer is, "To simplify the task for the road user; to make possible equitable administration and enforcement of traffic regulations; to aid in the economy of highway operation."

The task of the road user is simplified because of familiarity with standard traffic control devices. Equitable administration and enforcement of traffic regulations begins with a degree of uniformity in the application, understanding and enforcement of the traffic control devices. Certainly economy is an important product of uniformity of devices because, as an example, quantity buying usually results.

UNIFORMITY DEFINED AND ACHIEVED

Uniformity consists of: not only the same type of devices, used throughout the nation, but also the application of devices themselves; as to their placement; as to the warrants used in determining whether the devices should be used at all; as to the location in which they are placed once the need has been determined; as to a degree of uniformity in enforcement. It cannot be expected that every case will be handled in precisely the same manner because conditions differ from point to point, and even from day to day at the same location.

How is uniformity achieved? Simply by treating situations in the same way consistently, and by having different jurisdictions treat different situations in the same way that both adjacent and remote jurisdictions are treating them. Uniformity is achieved by use of the Uniform Manual which may include both the National Uniform Manual and the State Manual.

Engineering judgment must also be used for a high degree of judgment is needed in many instances both as to the selection of the proper device for a given situation, and as to the way in which the device is applied to control the problem which is encountered.

When uniformity is to be achieved, perhaps the most significant date is that set by the Bureau of Public Roads which has ruled that uniformity of devices and their application is to be achieved on the Federal Aid Highway System by the year 1968. Requirements may vary from state to state but most of the states are moving toward the achievement of statewide uniformity either by the date 1968 or prior thereto.

BENEFITS OF UNIFORMITY

When we consider who is affected we find of course that the general public—drivers and pedestrians—are the persons most benefited by uniformity of traffic control devices. We also find the state highway departments, the cities and the countries in their engineering divisions are favorably affected. Budget directors find that a program of standardization of traffic control devices program may cost some money at first but the long-range effect is to save money. Legislators will find it to their advantage because it promotes the uniform application of traffic laws, and this of course results in beneficial effects to the police and to the courts.

TRAFFIC CONTROL DEVICES

A traffic control device should fill an important need. Needs are evaluated in terms of warrants for use of the device. Some of these warrants are very specific, while others are somewhat general and subject to the application of engineering judgment. Research is still going on in this field; for example, the author's company is working on a National Cooperative Highway Research Program involving the development of warrants for the use of "Stop" and "Yield" signs at intersections.

A traffic control device should command attention, the right amount of attention. It must be compatible with the other devices in a system so that it will not provide undue emphasis unless there is some special need for it to draw emphasis to that particular traffic control device.

A traffic control device should be made of the proper materials in the first place and thereafter it should receive a reasonable good amount of maintenance so that it will remain in optimum condition. Generally when a traffic control device has dropped to 70 percent of its original appearance or efficiency it is in need of maintenance or replacement.

Nearly all traffic control devices except those applicable only during daylight hours should have provision for night visibility consisting of either reflectivity or illumination of the sign. In urban areas the use of illumination (generally by means of interior illumination in the device itself) is a most important application that is going to grow in general use. In Cincinnati, during a period of years, approximately one thousand interior illuminated signs were installed, most of them 24 in. x 30 in. in size. These devices added tremendously to the effectiveness of traffic control, particularly at locations where there is bad background or other interference, and for use at signalized intersections.

A traffic control device should have a clear, simple meaning. Uniformity provides instant recognition, which is important at higher speeds. Most traffic control devices should have a brief message so that the driver can comprehend them rapidly.

A traffic control device should command respect. "Stop" signs, for example, should be installed on the basis of an arterial street system in an urban area, thus giving benefits to the majority of the motorists while to some extent penalizing the movement of the minority. Indiscriminate use of traffic control devices breeds disrespect. Included in such bad examples are the over-use of "Stop" signs, the installation of unrealistic speed limits, improper turn markings, improper school zone markings, examples are the over-use of "Stop" signs, the installation of unrealistic indefinite warning signs, such as the "Dangerous Intersection" sign placed at a location where fundamental correction should be made instead of the signing, "Slow" signs which give no indication of the reason for the need for slow driving.

In the field of traffic signals it should be kept in mind that traffic signals should move traffic. Those installed primarily to stop traffic tend to breed disrespect for traffic signals and in fact for all types of traffic control devices.

There are about ten characteristics of good traffic signal control. The first is that the control shall be warranted in the first place. There are too many signals throughout the country which do not fulfill this characteristic. The second is that it should be part of a traffic control system and not just an isolated traffic control spot. The third is that it should be designed to interrupt arterial street traffic to the minimum possible extent. This is achieved by such things as the use of progressive flow in the timing program, by use of the shortest practical cycle, by the use of actuation where it is feasible even to the extent of using actuation with a background cycle in a pretimed system. This provides flexible control to fulfill demands which vary with different days of the week and with different hours of the day.

Fourth, the traffic signal heads should be located where they can be seen, generally out over the roadway which can be done by the use of mast arms or span-wires. While span-wires are sometimes unsightly they provide an extremely effective way of getting display of traffic control devices which really can be seen by the motorist. In this connection there should be uniformity of location within a given jurisdiction so that once the motorist gets in the habit of looking for control devices in a specific type of location, he will generally see them there.

Fifth, there should be a minimum number of phases. In some instances it is worthwhile to simplify control by installing "No Left Turn," or "One-Way Traffic," thus reducing the complexity of a signalized location.

Sixth, there should be clear indications, well-maintained heads. Seventh, there should be a multiple number of heads—at least two in each direction—so that one of them at least can be seen beyond trucks and buses which might obscure visibility of a single display. Eighth, there should be supplementary signs to help the motorist in understanding the type of control prevailing at the intersection. Quite often the use of internally illuminated signs is extremely helpful in improving the control at signalized intersections. Ninth, there should be supplementary channelization and street markings where needed to assist the motorist. Tenth, there should be protection in suitable manner from background interferences, either by the use of shields back of the device or by placing supplemental devices in locations where there is a minimum of background interference.

The adoption in general of use of the 1961 Manual on Uniform Traffic Control Devices during the 1960's will historically be looked upon as a real landmark in traffic control. Many states for the first time regard the Manual on Uniform Traffic Control Devices as the "Bible" rather than as merely a guide. The Bureau of Public Roads for the first time is using it as a means to enforce compliance with uniform standards on the Federal Aid Highway System. Alternates of devices and application thereof are minimized for the first time in both the number of and application of devices. The whole field of uniformity has as a consequence been stabilized to a degree never before realized.

RESEARCH

Improvement nevertheless has not been stifled. The very fact of putting teeth into the compliance with the Manual has indeed placed greater emphasis on a need for knowledge and research and better definition of requirements both as to devices and as to their application. Formalizing the requirements for securing approval of experiments and

research, opens the opportunity for dissemination of knowledge of what is going on and for evaluation of results by a great number of people.

While adoption on a nation-wide basis of the current manual is being worked upon, those who are concerned with the improvement and further development of traffic control devices are beginning the work of developing background material for the next edition of the manual which probably can be anticipated about the year 1970. It is not too early to begin some of the research work necessary to develop new standards and new warrants. In this connection the Institute of Traffic Engineers is beginning the sponsorship of workshops on traffic control devices for the purpose of appraising the present application of devices and learning more about what is needed for improvement in the future. The pilot workshop in this series is to be held in Columbus, Ohio on May 25 and 26, 1965. This will be an opportunity for the people in Indiana to cooperate with others in Michigan, Ohio and Kentucky in a regional conference which will provide the basis for developing the format of similar conferences in other parts of the country.