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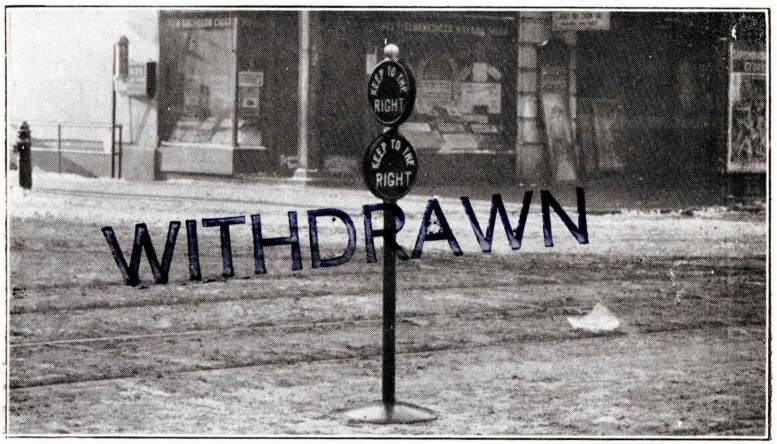
THE USE OF TRAFFIC SIGNS



WITHDRAWN

TECHNICAL SERVICE BULLETIN 17

ENGINEERING EXTENSION DEPARTMENT

AMES, IOWA

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THE TECHNICAL SERVICE BUREAU

The Technical Service Bureau is maintained jointly by the Engineering Extension Department and the Engineering Experiment Station for the purpose of making more widely available the services of these departments to the industrial interests of Iowa.

On request, the Bureau furnishes cities and towns special information and preliminary expert advice in matters of municipal improvement. A similar service is offered to the industrial interests of the state.

There are issued from time to time bulletins of special interest to municipalities, industries and trades of the state.

The following bulletins of interest to municipal officials are available:

No. 6—Surface Oiling of City Streets.
No. 13—Ornamental Post Lighting of City Streets.
No. 15—The Collection and Disposal of City Refuse.
No. 16—The Operation and Care of Sewage Disposal Plants.
No. 20—Street Name Signs.
No. 21—Concrete Sidewalk Construction.

THE USE OF TRAFFIC SIGNS

By D. C. Faber, Industrial Engineer

The regulation of street traffic to facilitate the movement of vehicles in congested districts, prevent accidents and safe-guard pedestrians, has become one of the most important problems of municipal government. Until recently only the larger cities were confronted with this problem, but with the increasing use of motor vehicles even the smallest towns are finding it necessary to give this matter some attention. As it is impracticable to maintain the number of traffic officers required to make such regulations clear to the public, many municipalities are using traffic signs for this purpose. Obviously, such signs cannot cover all situations in traffic regulation, but within the limits for which adapted this form of instruction is proving very popular with the traveling public.

Traffic signs may be used to advantage for the following purposes: to prevent cutting of corners at street intersections; to regulate the parking of vehicles; and to give warning of dangerous conditions.

TRAFFIC SIGNS

Traffic signs should be uniform in shape and size and should carry only such wording as is necessary to make the meaning plain. Although signs of various shapes are frequently seen, the general tendency at present is toward the use of circular disks from 12 inches to 18 inches in diameter. Such disks are readily recognized as warning signs, for on account of their shape they are not likely to be confused with the advertising signs frequently seen on streets and highways.

The effectiveness of a traffic sign depends largely upon the colors used. It is essential that the sign attract attention, and that strongly contrasting colors be used in order that the wording may be read easily.

On account of usually being associated with danger or warning signals, red is the most commonly used color in the makeup

of traffic signs. The wording is commonly done in white or aluminum letters on a red background, because the light letters show up plainly on the darker background, and because on account of the predominance of red the sign is noticeable at a considerable distance. Black and white, black and aluminum, and blue and white combinations also are used. Signs made with these colors are easily read, but do not attract attention, especially from a distance, as quickly as do those of red.

In an address before the National Safety Council, Mr. W. P. Eno states: "Traffic signs should be uniform in shape and color and briefest in wording. Those for warning and directing the movement of traffic, vivid yellow letters or arrows on a black background. Those for designating public parking spaces, cab stands, car and bus stops, etc., should have the colors reversed, i.e. black on yellow. These colors contrast best of all in the daytime and when illuminated at night."

Rolled sheet iron and steel are the materials most commonly used for traffic signs on account of the low cost and durability of these materials. Of these, the sheet iron has the slight advantage of superior rust-resisting qualities. These materials are used in painted signs, in enameled signs, and in signs having the letters formed by special machine operations.

In this bulletin only a few of the more commonly used types of signs are discussed; and on account of the tendency toward standardization of shape in traffic signs, only those in the form of circular disks are shown.

INTERSECTION SIGNS

The state law relative to the operation of motor cars provides that in cities and towns such vehicles shall travel on the right hand side of the street, as near the curb as the condition of the street will permit; that in turning to the right into another street, they shall turn the corner as near the right hand as possible; and in turning to the left into another street, they shall pass to the right and beyond the center of the intersection before turning. In a great many cities and towns, traffic posts or signs are placed at the center of street intersections for the purpose of enforcing the third provision, with reference to the cutting of corners.

The number of designs of such posts is almost as large as the number of cities using them. Some cities have erected monuments of concrete; or cast iron lamp posts; or sewer pipes filled with concrete; while others use portable signs of various types.

The question as to whether or not such signs are obstructious to the street, rendering the municipality liable in case of accident, has been raised frequently. The statutes provide that cities and towns shall have the care, supervision, and control of the public highways and shall cause the same to be kept open and in repair and free from nuisances and obstructions. As a general rule, slight obstructions of the street for the sake of general convenience do not render a municipal corporation liable for a resulting injury; and where obstructions are placed in a street for purposes authorized by law, or where they are intended for the protection of the general traveling public, they do not in themselves constitute a nuisance, but all reasonable precautions must be taken to prevent injury by them. Where a street is opened for travel for its entire width, care must be exercised to maintain the whole width of it reasonably free from obstruction; and a municipality cannot say, after an injury is sustained in consequence of an obstruction in a portion of a street, that part of such street was intended to be used and part was not. While the question is not free from doubt, it would seem that whether or not traffic posts or signs at the center of the street intersection are such obstructions as to render the municipality liable in the event of injury caused by them, would be a question of fact to be determined by jury in any particular case. Some of the facts which might have a bearing on such a case are: the width of the streets; whether or not the traffic signs were reasonably suitable for the purpose intended; the volume of traffic; and possibly others. In this connection, it is interesting to note that some attorneys hold that any fixed traffic post at the center of an intersection is a nuisance for which the municipality is responsible.

Regardless of questions of liability, most towns and cities at the present time are using intersection signs which are not permanently fixed in the roadway, and are of such construction that, if run into, they are tipped over without damage to the

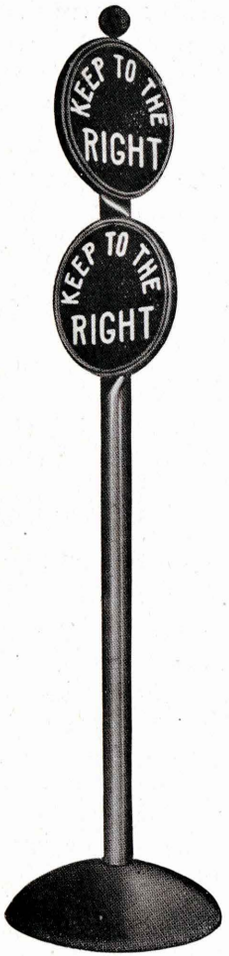

Fig. 1. Intersection Sign Having Letters Milled into the Plates

vehicle. Such signs prevent corner cutting just as effectively as heavy, permament ones; they are of low cost; they can be removed from the street when desired; and, last but not least, there is small chance for serious accident in case they are driven into.

These standards are usually about 5 feet in height, and are made up so that the instructions: "Drive to the Right," or some similar phrase, is visible from any of the four directions of approach, making what are commonly called four-way signs. Such signs should be so constructed that they will not be damaged by being tipped over. If the signs are to be left in place at night, they should be fitted with lamps or lanterns, unless they are well lighted by nearby street lamps.

Figure No. 1 shows a four-way intersection sign having the letters engraved or milled into the plates. The disks are made of 12 gauge rolled sheet iron, with a border pressed around the edge to stiffen the plate. The letters are cut into the plate with a milling cutter, after which the signs are galvanized and the enamel backed on, and the letters finished in aluminum. For this particular sign, the plates are built up in pairs, back to back, and riveted to a standard 2 inch pipe. By the use of dies, this pipe is flattened to a thickness of about ½ inch in directions at right angles to each other, forming two flat surfaces upon which the four signs may be riveted. The whole is topped with a cast iron ball which prevents rain or snow from entering the pipe. The base, which is made of cast iron, is 18 inches in diameter. The whole sign is 5 feet high and weighs 70 pounds, complete. The selling price is $8.50.

These standards can be equipped with electric lights if desired, or with oil lanterns for use where electricity is not available.

On account of the depressed letters, the above signs are very easily repainted when necessary.

A sign having "drilled-in" letters is shown in Figure 2. The disks of the sign are made either of sheet iron or steel 3/16 inch thick and 14 inches in diameter. The letters are formed by shallow holes drilled into the sign, which are filled with a white composition in such a way that the letters are depressed below the surface of the plate. The disks are galvanized and painted, and the letters finished in aluminum. The fittings holding the disks are malleable castings, and the base is of cast iron. This standard can be equipped with lantern when desired. The price of the sign as shown is about $11.00.

Fig. 2. Intersection Sign with Drilled-in Letters

PARKING SIGNS

Many municipalities find it necessary to restrict the parking of vehicles in certain districts, to prevent the blocking of streets and interference with business. Some cities prohibit parking in front of hotels, theaters, and other places which have a large number of patrons arriving or leaving by motor vehicles; others set aside whole blocks in which vehicles are not allowed to stand; some allow parking in the center of the street, or on one side or the other only. On account of this lack of uniformity in different localities, areas in which parking is restricted or prohibited should be plainly marked.

There is a wide range in colors and wording used on parking signs, depending upon local tastes and conditions. A common style of portable parking sign is shown in Figure 3. This particular sign has a target 12 inches in diameter with the let-

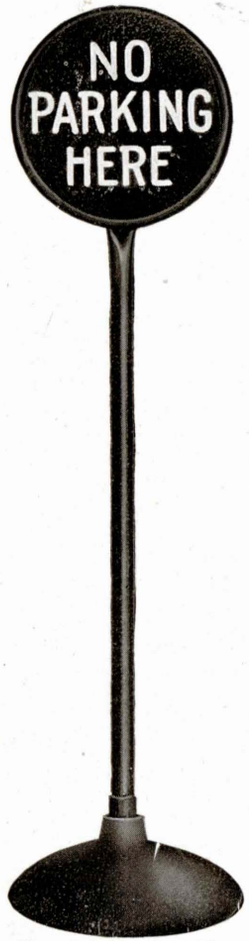

Fig. 3. Parking Sign with Milled Letters

ters milled into the plate. The height to the top of the target is slightly over 4 feet. A large part of all the parking signs in use are of this general style, although different processes are used in making up the disk or target.

Mason City uses signs of the type shown in Figure 4. These signs are painted on disks 12 inches in diameter made of 16 gauge sheet iron. The lettering is black on a bright red background, with both sides of the plate lettered. The first signs used in Mason City were painted white with black letters; but, because the white backgrounds were so easily soiled, the change was made to red and black. The signs are placed on portable standards, and are four feet three inches in height. On the standard just below the disk, two small hooks are placed to which ropes are tied when it is desired to rope off any particular space. These signs cost $3.00 complete.

The Des Moines signs, shown in Figure 5, have black letters on a white background.

WARNING OR CAUTION SIGNS

For warning or caution signs marking danger points, bright red disks 18 inches in diameter, on permanent posts or standards outside of the traveled portion of the street, are very effective. Signs smaller than 18 inches should not be used, as it is desirable that they be noticed and read at a considerable distance.

Warning signs should be from 7 to 8 feet high and should be placed from 50 to 75 feet from the point of danger. In Portland, Oregon, where several hundred such signs are in use, a definite rule requires that they be placed on the right hand side

Fig. 4. Parking Sign used in Mason City.

Fig. 5. Parking Sign used in Des Moines.

of the roadway, one foot back from the curb line and 50 feet from the point of danger, except on grades, where they are placed on top. These signs have proved of value in preventing accidents on narrow streets, reverse curves, bad turns, dangerous corners, and steep grades. Bridges and railroad crossings are also marked, and drivers are warned to drive carefully in congested districts, near schools and fire stations, and to drive quietly near hospitals. A few of these signs are shown on the following page.

On acount of the variety of warnings necessary, painted sheet iron or steel signs are commonly used, although manufacturers of special types of signs make a variety of warning signs suitable for most conditions. The porcelain enameled signs are used considerably in this connection, and special designs can be secured from the makers at reasonable prices.

It is not advisable to attach warning signs to telephone poles, as they are liable to be overlooked in many cases on account of the distance from the traveled part of the road; special posts should be used instead. Posts or standards of wrought iron or steel pipe set in concrete are used, as are certain types of posts with bases so constructed that no concrete is necessary in setting. Standards should be repainted as often as necessary, that they may present a neat appearance.

To those municipalities desiring to construct heir own signs, the method of painting the Portland "Safety First" signs is of interest.

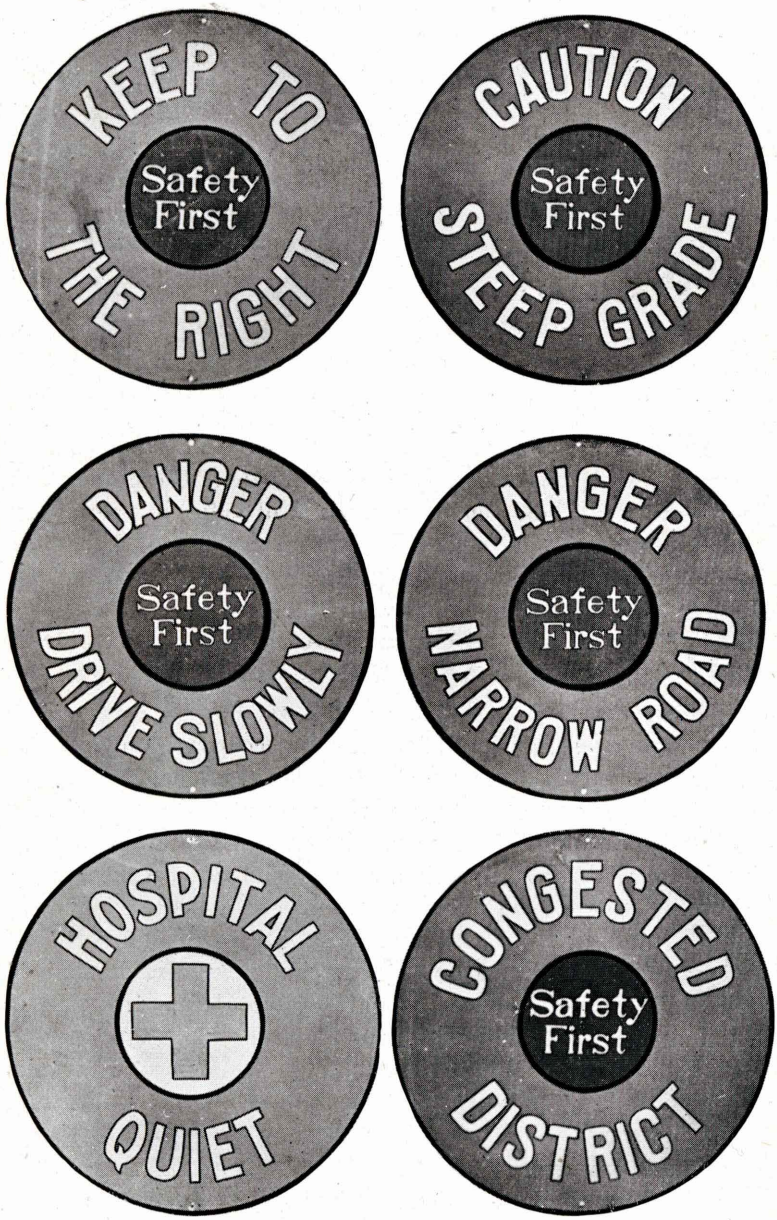

Fig. 6. Warning Signs used in Portland, Oregon