

Chapter Hy 21

TRAFFIC CONTROL SIGNALS

Hy 21.01	General	Hy 21.04	Installation of vehicular traffic control signal equipment
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Hy 21.01 General. (1) **AUTHORITY FOR THESE RULES.** Pursuant to section 349.08(1), Wis. Stats., the commission prescribes these rules for the design, installation and operation of traffic control signals.

(2) **APPLICATION.** These rules shall apply to all traffic control signals, including those presently installed.

History: Cr. Register, August, 1962, No. 80, eff. 9-1-62.

Hy 21.02 Effective date of regulations. All traffic signal installations made after January 1, 1963, shall comply with these rules. Installations made prior to January 1, 1963, shall comply with Chapter Hy 15 as published in the Wisconsin Administrative Register for January, 1956, or with these rules. After September 30, 1970, all installations on all highways shall comply with these rules.

History: Cr. Register, August, 1962, No. 80, eff. 9-1-62; am. Register, April, 1967, No. 136, eff. 5-1-67; am. Register, September, 1970, No. 177, eff. 10-1-70.

Hy 21.03 Design of vehicular traffic control signal equipment. (1) **DESIGN OF LENSES, REFLECTORS AND LAMP RECEPTACLES.**

(a) **Shape.** All signal lenses used to control vehicles shall be circular in shape except that arrow lenses may be rectangular.

(b) **Size.** 1. There are two approved nominal sizes of lenses—8 inches and 12 inches.

2. The 8-inch circular lens shall have a visible diameter of not less than $7\frac{1}{4}$ inches and an over-all diameter of not less than $8\frac{3}{8}$ inches. The 8-inch rectangular lens shall have a visible dimension of not less than $7\frac{1}{4}$ inches and an over-all dimension of not less than $8\frac{3}{8}$ inches.

3. The 12-inch circular lens shall have a visible diameter of not less than $11\frac{1}{2}$ inches and an overall diameter of not less than $12\frac{1}{32}$ inches. The 12-inch rectangular lens shall have a visible dimension of not less than $11\frac{1}{2}$ inches and an overall dimension of not less than $12\frac{1}{32}$ inches.

(c) **Colors and arrow design.** 1. The colors of red, yellow and green signal lenses shall conform to standard specification D-10.1-1958, UDC 656.057 adopted on October 16, 1958, by the American Standards Association, 70 East 45th Street, New York 17, New York, as to spectral transmission. Copies of the said standard specification and the

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1960 supplement thereto are on file at the main office of the commission in Madison, and in the office of the secretary of state and revisor of statutes.

2. All arrows shall be on an opaque background and the arrow shall be the illuminated part of the lens. The arrow shall be reproduced on the lens in conformance with the dimensions and shapes shown on either Figure 2 in the aforesaid standard specification D-10, 1-1958, or Figure 2 in the supplement thereto, whichever is needed. Each arrow lens shall show only one arrow direction.

(d) *Lettering.* Lettering shall in no case be used on the visible part of vehicular signal lenses.

(e) *Illumination.* Each lens shall be illuminated independently. Especially designed traffic signal lamps shall be used with a minimum of 67 watts for 8-inch lenses and 108 watts for 12-inch lenses. When 12-inch yellow lenses are used for flashing operation, the wattage shall be reduced so that the brilliance of the illuminated lens will be equivalent to the brilliance of an 8-inch yellow lens with a 67-watt lamp.

(f) *Visibility.* When a vehicular traffic signal lens is illuminated and the view of such an indication is not otherwise physically obstructed, it shall be clearly discernible to drivers it controls at all distances from 10 feet to 1,000 feet under all atmospheric conditions except dense fog, and the green arrow shape shall be recognizable from 10 feet to at least 200 feet in advance of the signal.

(g) *Sun phantom.* The optical unit (lens, reflector, socket and visor) shall be so designed that sun phantom, or apparent illumination of the lens will be at a minimum when the lens faces the sun and the lamp is not burning.

(h) *Lamp receptacle.* The lamp receptacle shall be designed to hold a lamp of required wattage with the light center at the focal point of the reflector.

(i) *Visors.* Each optical unit shall be equipped with a suitable visor of such shape and size as is necessary to aid in reducing sun phantom and insure that the signal indication shall not be visible to cross-traffic to such an extent as to be confusing.

(2) DESIGN OF SIGNAL HEADS. (a) *Number of lenses.* 1. Each vehicular signal face, except on a ramp metering signal, shall have at least 3 but not more than 5 lenses—red, yellow and green (circular or arrow)—except where a green arrow lens is used alone to indicate continuous movement, or where because of special turning or other movement problems, flashing yellow or flashing and steady red indications are used to supplement an otherwise normal signal installation. Ramp metering signals may have only 2 lenses—red and green.

2. Green arrow signals shall be used at intersections where specific movements are individually controlled. These include a straight-through arrow, a left-turn arrow, and a right-turn arrow.

(b) *Arrangement of lenses.* 1. Lenses in a traffic signal face that is not mounted over the roadway (hereinafter referred to as post-mounted) shall be arranged in a vertical line. Lenses in a traffic signal face that is mounted over the roadway (hereinafter referred to as overhead-mounted) shall be arranged in either a vertical or horizontal line.