

OFFICE MEMORANDUM



MICHIGAN

STATE HIGHWAY DEPARTMENT

March 19, 1965

To: E. A. Finney, Director
Research Laboratory Division

From: M. H. Janson

Subject: Blink-A-Lite "CAUTION" Sign. Research Project 64 NM-121.
Research Report No. R-503.

The subject sign has been tested and evaluated as recommended at a New Materials Committee meeting on September 2, 1964. This report is based on information received from available literature, a memorandum from the Traffic Division, field observations, and laboratory observations.

Available literature included Federal Specifications L-S-00350a (G.S.A.-FSS) dated June 17, 1964 which, according to a letter from W. W. McLaughlin to R. L. Greenman of July 14, 1964, were written around the Blink-A-Lite system of signs. The specifications, therefore, cover signs such as the sample sign submitted and similar signs such as highway warning signs. Specification requirements for traffic control signs describe highway warning signs in various sizes and with various legends.

The laboratory evaluation, therefore, was not limited to the sample sign submitted, but included other Blink-A-Lite signs, especially the traffic control signs as described in the Federal Specifications. The sign submitted had a 11-inch by 23-inch face containing a 5-7/8 inch black legend of "CAUTION" on a yellow background.

One of the provisions of the Federal Specifications stated that the Blink-A-Lite signs built for use as traffic control signs should conform to all requirements of the Manual on Uniform Traffic Control Devices for Streets and Highways. The daylight appearance of the face on the sign submitted does conform to the Standard Yellow Color as required in the Manual, however, the night time appearance of the face is more green than the Standard Highway Yellow Color.

The Federal Specifications in paragraph 3.9(d) state that the flash rate shall not vary by more than plus or minus 15 percent of the pre-set rate at 68°F when the sign is operated in ambient temperatures between -20°F and +120°F. Laboratory tests showed that the flash rate changed more than 30 percent.

Federal Specifications L-S-00350a state in paragraph 3.9(c) that the flashing of the sign at night shall be seen at a distance of 1/4 mile. On November 24, 1964, the sign submitted was observed in the field on a clear night at a distance of 1/4 mile. The sign was placed beside a battery-operated flasher. Flashing of the sign submitted could be observed but appeared gray in color and had little or no attention value. The battery-operated flasher

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appeared much brighter. Again on March 11, 1965 the sign submitted was observed in the field on a clear night at a distance of 1000 feet. The sign was placed beside a 36-inch by 36-inch highway warning sign fabricated of 3M reflective sheeting. The reflective sheeting sign was much brighter than the sign submitted when both signs were viewed under high-beam and low-beam headlight illumination. Other field observations showed that the flashing of the sign submitted could not be seen on a cloudy-overcast day. The flashing of battery-operated flashers was discernible on this same day.

Night time field observations obtained during a current laboratory test of sign legibility showed that an observer with normal eyesight can read a 7-inch letter legend at 360 ft with the sign illuminated at 2 ft-Lamberts, and can read a 7-inch letter legend at 430 ft with the sign illuminated at 20 ft-Lamberts.

The legend on the Blink-A-Lite sign submitted is 5-7/8 inches and the sign has an 8.5 ft-Lambert brightness. By calculation then this sign would be legible at a distance of approximately 350 ft at night which may be a sufficient legibility distance. It should be noted, however, that a driver approaching this sign at 60 mph would not see the illuminated sign more than three times within this legibility distance.

Frank DeRose of Traffic Research in his memorandum dated October 29, 1964 to H. H. Cooper listed several disadvantages of the Blink-A-Lite type of sign. These disadvantages still exist and the disadvantages not covered in the above discussion are listed as follows:

1. Blink-A-Lite signs are fabricated of steel and the Department requires the use of aluminum in similar signs.
2. Blink-A-Lite signs use formed sign tubing and the Department has discontinued the use of such tubing because of high maintenance costs.

Since the Blink-A-Lite sign submitted performed very poorly in relation to reflectorized warning signs and other warning devices such as battery-operated flashers, we would not consider the Blink-A-Lite device satisfactory for use among warning signs and devices already in use by the Department.

OFFICE OF TESTING AND RESEARCH



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