

FINAL REPORT
EVALUATION OF TREATED WOODEN SIGN POSTS

by

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(The opinions, findings, and conclusions expressed in this report are those of the author and not necessarily those of the sponsoring agencies.)

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SUMMARY

In view of the Virginia Department of Highways and Transportation's need to conserve dwindling revenues, the Traffic Research Advisory Committee recommended that the feasibility of using unpainted, treated wooden sign posts instead of painted posts be investigated. With the subsequent change to the use of unpainted, treated wooden sign posts, the Advisory Committee recommended that the evaluation be extended to compare the target values of painted and unpainted posts. In the evaluation, special attention was focused on residues formed from the chemicals used to treat the post and adverse effects they might have on the legibility and general appearance of the sign panel. The target values of a painted and an unpainted post were observed under different conditions.

After 36 months, the retroreflective characteristics of the sign panel mounted on the unpainted, treated wooden sign post had not changed abnormally or significantly. Also no streaking on the sign panel or twisting of the sign post was noted. A comparison of target values of the posts showed the painted post to be more visible at times; the difference was minimal and can be made inconsequential by using reflectors on the posts. The Department's decision to use unpainted, treated wooden sign posts was reconfirmed by the results of the evaluation.

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INTRODUCTION

The Virginia Department of Highways and Transportation used painted wooden sign posts until recently when the increasingly pressing need to conserve revenues prompted a recommendation by the Traffic Research Advisory Committee that the feasibility of using unpainted, treated wooden sign posts be investigated. After the initial use of unpainted, treated wooden sign posts, the Committee also requested that the target values of painted and unpainted posts be evaluated.

PURPOSE AND SCOPE

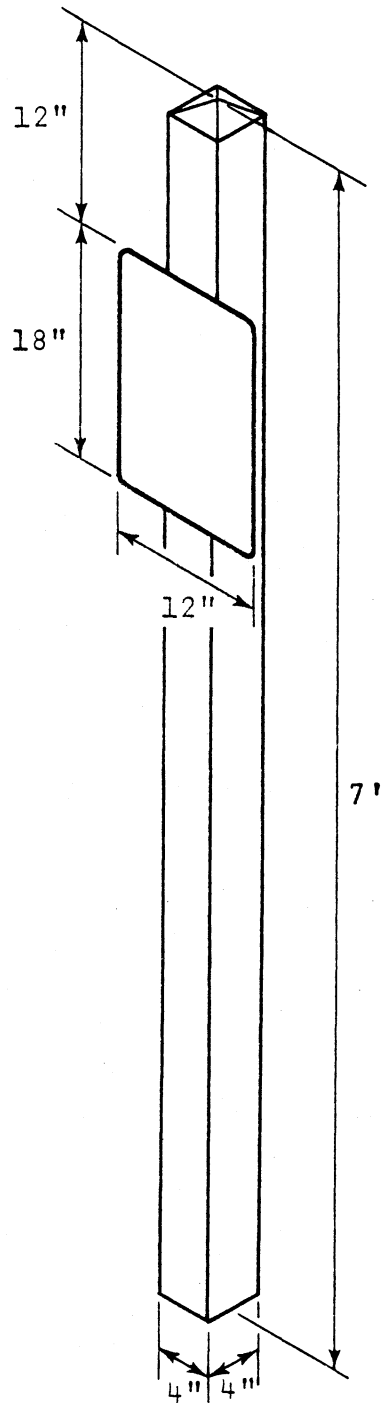
The objectives of this study were to investigate (1) any adverse effects of unpainted, treated wooden sign posts on the retroreflective qualities and general appearance of the facing materials on highway signs, and (2) the comparative target values of the painted and unpainted posts.

EVALUATION OF THE SIGN FACING MATERIAL

MethodologyPreparation of Test Post and Sign

One test sign was constructed using a seven-foot (2.13 m) treated wooden sign post and a sign panel 12 inches (30.48 cm) wide by 18 inches (45.72 cm) high mounted one foot (30.48 cm) from the top of the post as shown in Figure 1. The sign panel was fabricated from green, enclosed lens, reflective sheeting. The test sign was placed in the lot of the Charlottesville Residency Office for exposure to weathering on December 29, 1975. The sign panel was installed facing south and was mounted on a test stand in the standard vertical position.

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1 foot = .3048 meter
1 inch = 2.54 centimeters

Figure 1. Sign panel and post dimensions for the evaluation of the sign facing material.

Evaluation

The evaluation consisted of making measurements of the retroreflectivity of the sign material and observations of its general appearance. The retroreflectivity of the sign panel is an indication of the percentage of light it reflects, and if any residue from the chemicals used to treat the post were to collect on the sign panel, the retroreflective readings would be expected to decrease.

Bimonthly retroreflective readings were taken at four locations on the test sample (see Figure 2). A template was used to ensure that all bimonthly readings were taken at the same locations on the sign panel. A modified Gardner portable reflectometer was used to take the readings.

The general appearance of the sign panel was documented by visual observations, which were recorded every two months also.

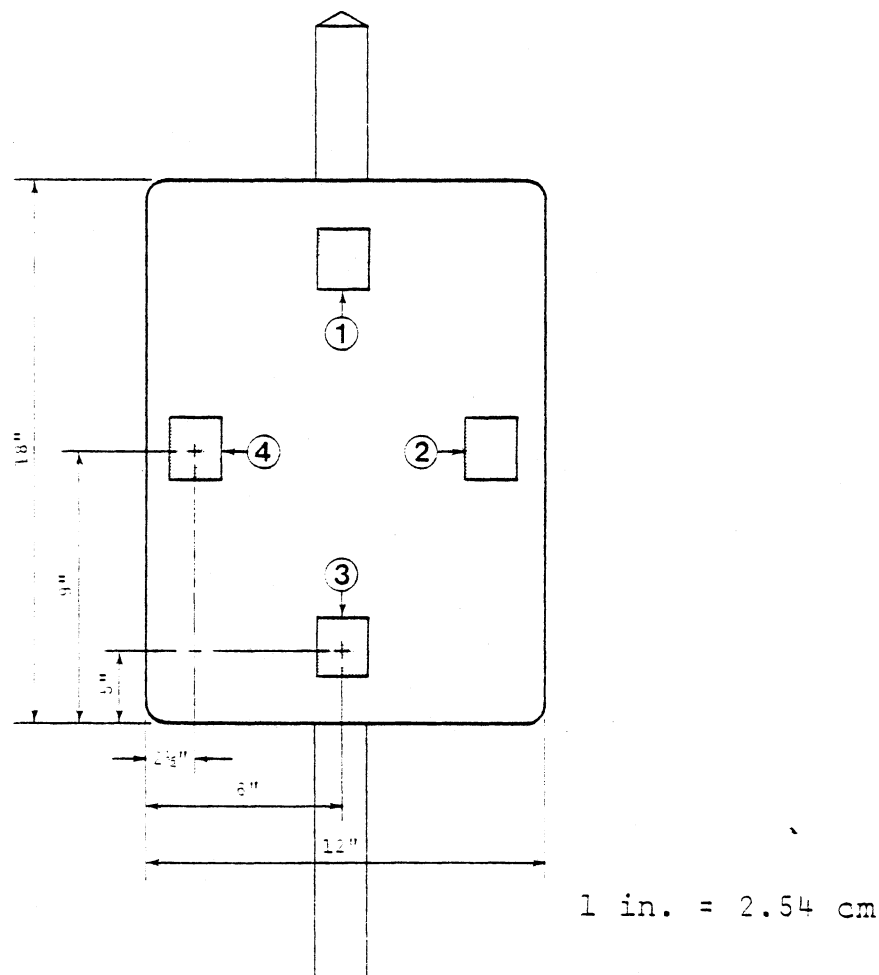


Figure 2. Retroreflective reading locations.

The average retroreflectivities (average of one reading each from the four locations) at the beginning of the study and after 36 months, along with the difference of averages and the percentage loss in retroreflectivity, are shown in Table 1.

Table 1

Summary of Retroreflective Readings of Sign on Unpainted Post

Average 12-75	Average 12-78	Difference of Averages	% Loss
14.00	12.88	1.12	8

As can be noted from Table 1, the sign panel mounted on the treated wooden post during three years of outdoor weathering decreased in retroreflectivity by 8%, which is considered normal; therefore, the sign panel was not affected by the unpainted, treated wooden sign post. Since the greatest expected error for the reflectometer is 1, the difference of averages of 1.12 is not significant.

Visual observations of the treated wooden sign post and panel showed no streaking of the sign panel by residue from the chemicals used to treat the post. Also, no twisting of the post occurred. During the last three months of weathering, light brown colored spots appeared on all four sides of the post.

EVALUATION OF TARGET VALUES

MethodologyPreparation of Test Posts and Signs

Two test signs using treated wooden sign posts 7-ft. 2-in. (2.18 m) above pavement level, two 2-ft. (0.61 m) by 2-ft. (0.61 m) STOP signs mounted 2 in. (5.08 cm) from the top of the posts, and two reflectors 3 in. (7.62 cm) by 8 in. (20.32 cm) fabricated from silver, enclosed lens, reflective sheeting mounted 1 ft. (30.48 cm) from the bottom of the signs were installed as shown in Figure 3. One of the sign posts was painted with two coats of the Department's white latex paint while the other was left unpainted. Both were installed on a test site on Route 1106 south of Charlottesville.

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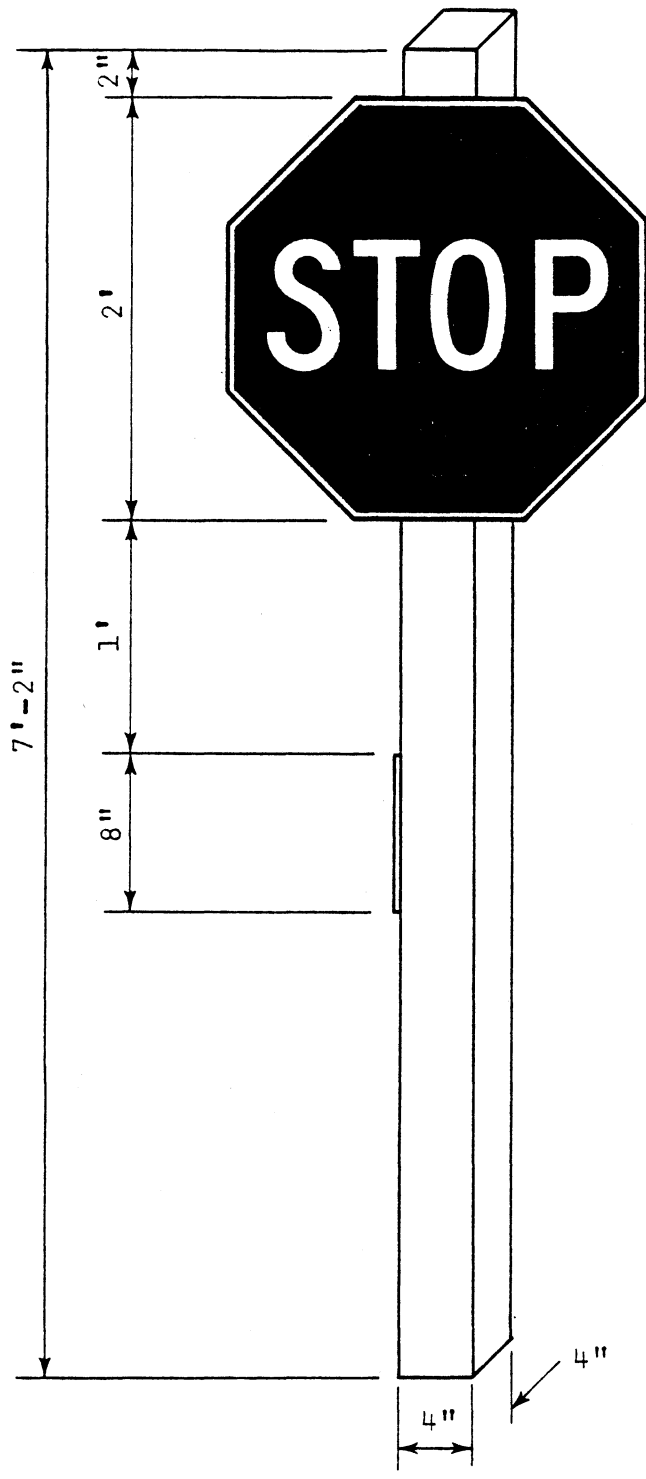


Figure 3. Sign panel and post dimensions for the evaluation of traquet value.

1 foot = .3048 meter
1 inch = 2.54 centimeters

Evaluation

To determine any differences in target values the painted and unpainted treated wooden posts with STOP signs were evaluated in clear weather, day and night, and with the sign faces perpendicular to the lane of travel, the sign backs perpendicular to the lane of travel, the sign faces parallel to the lane of travel with reflectors perpendicular to the lane of travel, and with sign faces parallel to the lane of travel without reflectors perpendicular to the lane of travel.

Visual observations and photographs of the four conditions were made day and night at different distances. The posts were examined at 100-ft. (30.48 m) intervals from 100 ft. (30.48 m) to 500 ft. (152.40 m) and then at 700 ft. (213.36 m) and 750 ft. (228.60 m) in daytime; and at 100 ft. (30.48 m), 200 ft. (60.96 m), 400 ft. (121.92 m), and 700 ft. (213.36 m) at night.

Results

It was found that during the day, both posts were visible at all the distances from which they were evaluated. The nighttime observations showed a little difference in results. At night, from a distance of 100 ft. (30.48 m) and with the headlights on low and high beams, the posts could be seen under all four conditions. At 700 ft. (213.36 m) with low-and high-beam headlights, the comparative visibilities shown in Table 2 were found. As can be seen from this table, at a distance of 700 ft. (213.36 m) at night with low-beam headlights, reflectors did delineate the painted and unpainted posts when the sign faces were parallel to the lane of travel and the reflectors perpendicular to the lane of travel. With high-beam lights and the same conditions, the painted post was more visible, while only the reflector was seen for the unpainted post when the sign faces were parallel to the lane of travel and the reflectors perpendicular to the lane of travel.

Table 2

Summary of Comparative Night Visibilities at 700 Feet (213.36 m)

<u>Orientation of Signs</u>	<u>Comparative Visibility</u>			
	<u>Low Beam</u>		<u>High Beam</u>	
	<u>Painted</u>	<u>Unpainted</u>	<u>Painted</u>	<u>Unpainted</u>
Faces Perpendicular	No	No	Barely	Barely
Backs Perpendicular	No	No	Yes	Yes
Faces Parallel, with Reflectors	Refl. only	Refl. only	Yes	Refl. only
Faces Parallel, w/o Reflectors	No	No	Barely	Barely

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CONCLUSIONS

Observations of a test sign on an unpainted wooden post during 36 months of exposure to weathering reconfirmed the Department's decision to use unpainted, treated wooden sign posts.

If it is desirable to enhance the visibility of the unpainted post at night, reflectors will serve this purpose.

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