

# PUBLIC RESPONSE TO BRIDGE COLORS

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Two test bridges were selected in Charlottesville, Virginia, to determine people's reactions to bridges covered with white, yellow, green, blue, red, brown, black, or aluminum-colored paint. One bridge was painted a different color each month, and the other was kept the same color for comparison. After each painting, interviews were held with (a) motorists seeing the bridges, (b) persons living near the bridges, and (c) people with formal aesthetic training. More than 1,300 interviews were held for the 10 different bridge colors. The results show that white, yellow, light blue, and green are definitely preferred over brown, black, and aluminum by all groups. Red and dark blue were liked by aesthetically trained people; others thought less highly of them. On the basis of this study, it is recommended that more extensive use of popular colors be considered for highway bridges in the United States. A technique to aid in making a color selection for any given bridge has been developed to photographically color-alter the picture of a bridge so that color comparisons can be easily and inexpensively made.

•A STEEL bridge in Charlottesville, Virginia, was selected to be painted different colors to determine people's responses to these colors. The bridge selected was the Locust Avenue bridge (Fig. 1) over the Charlottesville bypass (US-250). Within a few blocks of Locust Avenue along the same highway heading west is a similar bridge on Park Street (Fig. 2), which was used as a control bridge. Throughout the study the Park Street bridge remained the same color, light green. A traffic light is located just west of the Park Street bridge, which allowed for convenient interviewing of motorists viewing the two bridges when they stopped at the red signal.

Three different groups of people were interviewed about their color preferences for these bridges. Group A included a random sampling of motorists and vehicle occupants who just viewed the bridges. During such interviewing, a large sign was placed east of the Locust Avenue bridge on the bypass to alert travelers that a bridge color survey was under way and ask them to take note of the colors of the two bridges. Group B included people who lived near the bridges. It was believed that such people, feeling that the bridges were a permanent part of their neighborhood and that they therefore were more personally concerned, would represent a different point of view from transient motorists. Group C was made up of people with professional training in the arts, such as artists, architects, and landscape architects.

## PAINTINGS AND RESPONSES

In September 1972, the eastern face of the steel girder on the Locust Avenue bridge (originally light green) was painted its first color, white (No. 17886) (1).

Because the older surface paint on the Park Street bridge appeared shabby in comparison with the fresh paint on the Locust Avenue bridge, it was decided to repaint the eastern face of the steel girder on that bridge as well. This was painted light green (No. 14533) to approximate the original color of the Locust Avenue bridge.

Surveys of the three groups described previously were then begun. For group A (the motorists) only quick interviews were made while they were stopped at the traffic

Figure 1. Locust Avenue bridge.



Figure 2. Park Street bridge.

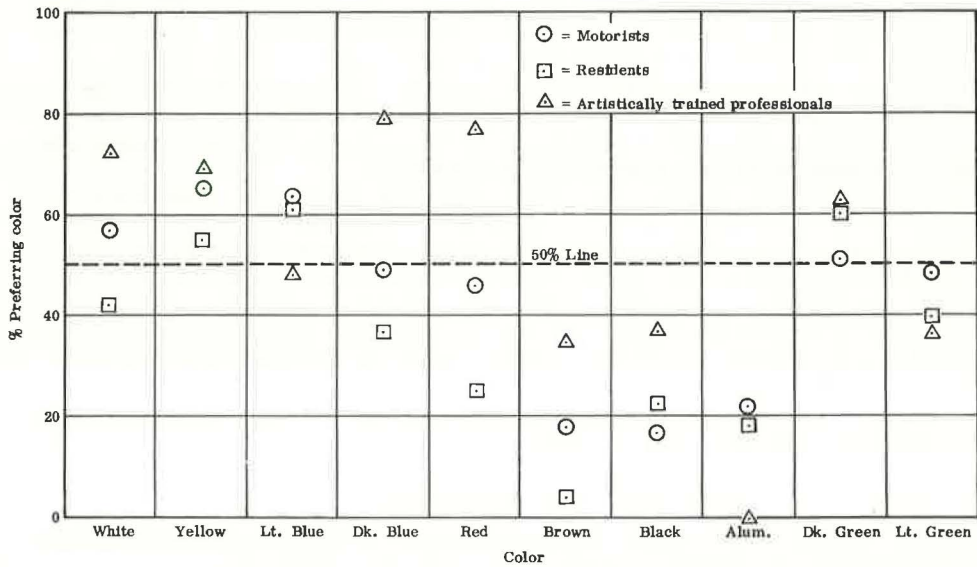


Table 1. Survey results.

Groups	No. Interviewed			Age of Interviewees (percent)			Preference* (percent)			
	Male (percent)	Female (percent)	Total	0-25	26-50	51-75	Like	Evenly Divided	Dislike	Indifferent
A (motorists)	78	22	131	36	58	6	57	14	25	4
B (residents)	38	62	26	31	42	27	42	12	42	4
C (artistically trained)	89	11	18	61	39	0	72	22	6	0

\*Compared to light green.

Figure 3. Color preference chart.



signal. The interviewers mainly obtained color preference on the Locust Avenue and Park Street bridges. Interviews of the other groups were more extensive and allowed for general comments regarding the color. Table 1 gives results of the survey for white. Group A (motorists) felt that white was highly visible; truck drivers especially liked it. Group B (residents) felt that white presented a nice clean look although it might soil easily. Group C (artistically trained) felt that white was satisfactory but that other colors were preferable.

At about 1-month intervals, the Locust Avenue bridge was repainted another color and surveys were taken again. The sequence of colors was yellow (No. 13538), light blue (No. 15200), dark blue (No. 15050), red (No. 11105), brown (No. 10091), black (No. 17038), aluminum (No. 17178), and dark green (No. 14062). Tables for these colors (similar to Table 1) are not shown for the sake of brevity, but they are available from the author on request.

### ANALYSIS AND CONCLUSIONS

The data are obviously subject to many interpretations. The percentage of people in each of the three groups who prefer a particular bridge color is shown in Figure 3. Because of the comparative technique used in the study in which each bridge color was compared with light green (standard), the preference for the standard color had to be arrived at by inference. An overwhelming number of comments by those interviewed who responded that their preference for the light green and dark green was almost the same showed that those who were evenly divided between the two colors and those who disliked the dark green as opposed to the light green were considered as preferring light green.

For purposes of further division, a 50 percent line is drawn across Figure 3 that separates the more popular from the less popular colors at a glance. Group A (motorists) preferred white, yellow, light blue, and dark green; these colors are closely followed by dark blue, light green, and red. Group B (residents) preferred yellow, light blue, and dark green; these colors are closely followed by white and light green. Group C (aesthetically trained professionals) preferred white, yellow, dark blue, red, and dark green; these colors were followed closely by light blue. Brown, black, and aluminum were unpopular with all groups.

Figure 3 shows that preferences of groups A and B do not differ significantly; this suggests that whatever colors are acceptable to transient motorists are also acceptable to persons who live near the bridge and consider it as part of their permanent neighborhood environment. But, as expected, the opinions of group C vary somewhat with those of groups A and B. Whereas yellow and dark green are liked by all groups, group C has a strong preference for dark blue and red.

Color preference is a subtle determination that is subject to time, place, mood, fashion, past association, and the like; however, it can be concluded that the interviewees would, by and large, be receptive to bridges painted different colors.

A small percentage felt that no extra money should be spent painting bridges different colors. There are also some who are not particularly aware of the color of bridges at all and would accept any reasonable color.

A great deal of quantitative information (1 through 12) is available on color and its effect on people; however, none applies to bridge structures. Universally, if any one color is more popular than any other, it is blue (2). This study shows that blue is indeed popular, but that, for bridges, other colors are liked as well. Many states already are using bridge colors other than the standard aluminum and green such as blue, yellow, white, red, and maroon.

### METHOD FOR SELECTING BRIDGE COLOR

The following relatively inexpensive procedure is proposed to provide a rational method for selecting bridge colors. It is based on the hypothesis that opinions from a group of people are apt to be more acceptable than an opinion from a single "expert." The method involves altering the bridge color by photographic means rather than by actually painting the bridge as was done in this study. This way, the bridge color can

be evaluated by a random or selected group of people conveniently and efficiently by viewing a series of colored slides or prints of the same bridge in different colors. It is recommended that the color of each bridge be considered individually in relation to its specific site and unique features. No one color suits all conditions.

For older bridges requiring repainting, photographs of these bridges can be taken as is, including their actual background or setting. For new bridges, the selection of the final paint color should be deferred until bridge construction is essentially complete. The color-altering process to be described can be accomplished in but a few days, which will not significantly delay the full completion of any new bridge.

The process is basically the same for all bridge types and colors but is modified somewhat depending on darkness of the original color of the bridge in question. These original colors will be classified as light (aluminum, white, yellow, etc.), medium (light or medium green, blue, orange, etc.), and dark (black, rust, etc.).

The following color-altering photographic technique has been developed, tried, and tested at the Virginia Highway Research Council for a variety of bridge types and colors and has been found to be quite realistic.

1. Photograph the bridge on outdoor color slide film.
2. Develop an 8- by 10-in. (20 by 25 cm) color print from the slide or slides selected. (The print should be of good quality.)
3. For light and medium original bridge colors, photographically reverse the color slide. (For dark original bridge colors, this step may be omitted.)
4. From the black and white negative, enlarge a number of black and white prints of the section of the bridge that will be color-altered. The enlargement must correspond exactly in size with the 8- by 10-in. (20 by 25 cm) color print. This can be done by placing the color print under the enlarger and carefully lining up the black and white negative projection with the color print. For originally dark bridges, project the original color negative onto black and white paper to produce the reverse black and white tones.
5. For originally light or dark bridges, apply colored transparent overlays of plastic acetate onto the black and white sections to be color-altered. (Commercially available zip-a-tone rub-on overlays are available in 144 different colors.) For originally medium-colored bridges, black and white prints must be colored with photographic oil paints or tints that are commercially available. For best results with oils, the black and white print should be on rough mat surface paper.
6. Carefully cut out the color-altered section of the black and white print, darken the cut white edges of the paper, and place this section (a bridge beam for example) on the corresponding section of the 8- by 10-in. (20 by 25 cm) color print.
7. With the color slide film, photograph the 8- by 10-in. (20 by 25 cm) print with the added color-altered section. Repeat this step, with as many different color-altered sections as desired.
8. Process the film used in step 7 for use as colored slides, colored prints, or both.

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