EVALUATION OF VISIBEADS IN EPOXY MARKINGS ON I-235

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DISCLAIMER

INTRODUCTION

In recent years, the nighttime wet pavement retroreflectivity of pavement markings has become an important issue. In a effort to continue research in this area, the Iowa Department of Transportation evaluated the effectiveness of Visibeads in the Des Moines metropolitan area. Visibeads are three to four times larger in diameter then conventional glass beads. This larger size provides for better retroreflectivity under nighttime wet pavement conditions. The areas chosen for evaluation do not have roadway lighting, therefore, making them a good choice for Visibeads. Although the DOT has tested Visibeads in the past with moderate success, it is believed that using Visibeads with longer life markings such as epoxy will improve their performance.

OBJECTIVE

The objective of this study is to evaluate the Visibeads for retroreflectivity, bead retention, and nighttime wet pavement visibility.

PROJECT LOCATION AND CONTRACTOR

Visibeads were placed on all pavement markings from the west mixmaster, east to the 35th Street exit ramp and from the north entrance ramp of Euclid Avenue, north to the north mixmaster. This placement affected approximately 199 stations of pavement markings which was about 5% of the total markings on the project.

With a bid of $228,913.91 the Century Fence Company from Pewaukee, Wisconsin was awarded the I-235 epoxy marking project. They began work on August 16, 1992 and completed the project on August 27, 1992. The Des Moines Construction Residency had to administer a change order to add Visibeads to the project, because they were not included in the original plan.

COST

The total additional cost of adding the Visibead to this project was $4,312.80.

PERFORMANCE

Retroreflectivity readings were taken annually with the last readings taken on July 11,1995. The 1995 average reading for the markings with Visibeads was a remarkable 194 and 220 Mcd./Sq. Ft./Ft. Cdl. for the white and yellow markings respectively. These numbers are slightly higher than the markings with standard glass beads. It should be noted that the Visibeads are a mix of approximately 50% large beads and 50% standard beads.
The reason the Visibeads were used was to improve the nighttime wet pavement visibility of the markings. However, this improvement has been difficult to quantify. Several nighttime wet pavement reviews have been conducted by various people in the Department. Some of the reviewers felt they could see the lines with Visibeads better than the lines without; however, others could see no difference. Unfortunately, there is no mechanical testing method to measure the difference.

CONCLUSION

Upon close inspection of the lines, the Visibeads are virtually all in place and in excellent condition at locations where the snowplow blades are unable to scrape the line i.e. where the shoulder pavement or adjacent pavement has a higher profile than the line so that the snowplow blade rides over the line. Conversely, where the snowplow blade is allowed to scrape the line, virtually all of the Visibeads are either popped out or sheared off. Therefore, Visibeads are probably an excellent all weather product in southern states but provide somewhat less of a benefit in northern states. When using Visibeads in the future, it is important to use a mixture of larger beads and standard beads so that we have adequate retroreflectivity if the larger beads are lost.