

---

January 1995

RSN 95-1




## **Pavement Markings Using Waterborne Paint and Visibeads® in Region 2**

The Oregon Department of Transportation (ODOT) spends approximately \$6 million a year to keep painted stripes on the highway for the safety of the motoring public. Approximately \$2.3 million dollars is for the paint, \$400K for beads, with the remainder going for equipment and labor.

The paint that is currently being used is a solvent-borne paint that has a significant Volatile Organic Compound (VOC) component that can significantly impact air quality. Each gallon of solvent-borne paint releases approximately 3.9 pounds of organic solvents to the atmosphere. This means that approximately 1.5 million pounds were lost to the atmosphere from last years painting operation. By going to water-base paints, the reduction in VOC would reduce solvent losses to the atmosphere by about 1.2 million pounds. Further, the Department of Environmental Quality is planning to limit the VOC's in pavement marking materials, in the Portland metropolitan area, by July 1, 1996.

In order to address the problems associated with solvent-borne paints, ODOT Region 2 staff bought sufficient waterborne paint to place approximately 760 linear miles of stripes. This enabled the Region staff to evaluate state-of-the-art materials and painting equipment. The areas where the paint was applied cover five distinct geographic locations and sites in each location were monitored for six months.

### **CONCLUSIONS**

-  The durability of the water-based paint, especially nighttime effectiveness, is as good or better than conventional paints.
-  Application characteristics of the latex paint were comparable to conventional paint.
-  Latex paints are more sensitive to cool and damp environmental conditions during application, which reduces the amount of available painting time each year.

### ***SUMMARIES OF CURRENT TRANSPORTATION RESEARCH***

(over)

- ☺ The number of lane miles painted per unit time was found to be comparable.
- ☹ The cost of waterborne paint is more than solvent-borne paint.
- ☺ Clean-up of equipment was simplified. The clean-up solvents and waste paint, that are now disposed of as a hazardous waste, were eliminated.
- ☹ The recommended application rate for visibeads is unrealistic and needs to be redefined. Use of Visibeads will not be practical for highway applications until satisfactory techniques and equipment for bead distribution are developed.
- ☺ Draft specifications for water-based striping paints have been produced and are now available.

### **RECOMMENDATIONS**

- ▼ ODOT should plan on converting to water base paint in the near future.
- ▼ An ODOT "Expert Task Group" (ETG) needs to be assembled to address problems associated with converting to water based paints. This group should make sure that the latest practices are being made available to the crews on a uniform basis. Further, the ETG should identify and direct research which would be aimed at making painting easier and more efficient as well as providing the public with optimum line quality.
- ▼ Legend applications should be converted to water based materials as soon as practical.
- ▼ Air quality in the Willamette Valley dictates that this should be the first area to convert to water based paints.

Recently, the final report for this research project was published. If you want additional information regarding this project or a copy of the report, please contact:

**Marty Laylor  
Oregon Department of Transportation  
Engineering Services Section  
Research Unit  
2950 State Street  
Salem, Oregon 97310  
(503) 986-2850**