

UDOT Pavement Marking Maintenance

2/1/2012

What We Do Pavement markings are composed of two major components: glass beads and a binder to hold the beads. The light from driver's headlights is reflected back to the driver (retroreflection) by the glass beads, providing illumination of the marking to the driver. This is illustrated in Fig. 1.

Many different types of binders are available. UDOT prefers to use a waterbased (latex) binder because of its relative low cost and ease of use.

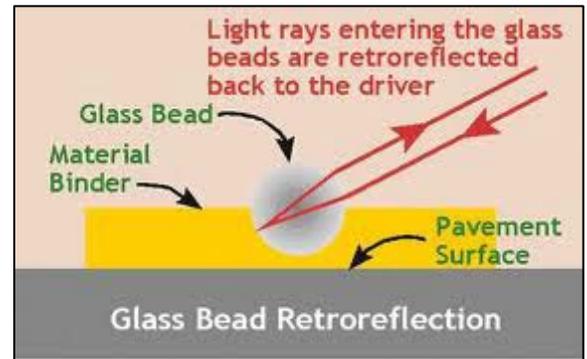


Fig. 1 Pavement Marking Principle

UDOT maintains 5840 centerline miles of pavement markings in the state annually. Regions 1 (Ogden) and 3 (Orem) each have a crew of that spends the warm months of the year painting pavement markings. Region 4 has three crews (Price, Richfield and Cedar City) that do the same thing. Region 2 (Salt Lake City) outsources its striping to local contractors annually.

The goal of every Region is to paint all pavement markings annually.

Reasons of long geographic distances, equipment malfunctions, manpower shortages, etc. often preclude this. Service contracts with local contractors are often initiated to help alleviate workloads. In FY 2010 Region 1 outsourced approximately \$1.1 M of striping to supplement work by state forces. The total percentage of outsourced work statewide during FY 2010 is shown in Fig. 2.

Pavement markings are divided into 3 categories: striping, messages, and islands/parking lots. During FY 2010 striping activities, both in-house and outsourced, accounted for 89.3% of the total outlay. Messages, islands and parking lots accounted for 10.7% of the cost.

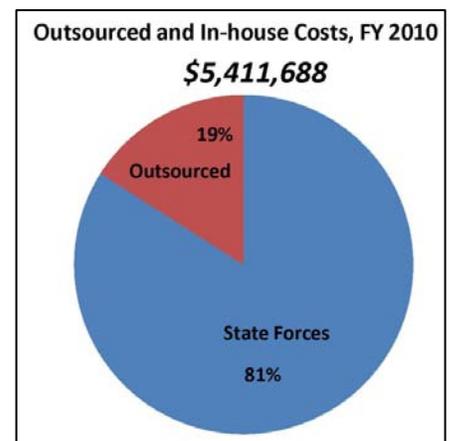


Fig. 2 Outsourced and In-house Cost, FY 2010

Warranty Contracting We are currently working on packaging a warranty contract to renew the pavement markings on I-15 in Salt Lake County. We are asking pavement marking suppliers to apply a product of their choice and guarantee that it will perform for a 5 year period. Our intent is to eliminate yearly public impact from striping operations by providing the best pavement markings we can with minimal disruption to traffic.

How We Measure Quality Pavement marking quality for striping and messages is measured subjectively based on the observed condition and is reported as a letter grade A through F. A target grade is established as a goal. The reported grade is compared with the target grade for each route segment. Work is prioritized based on this comparison. See Fig. 3 and Fig. 4.

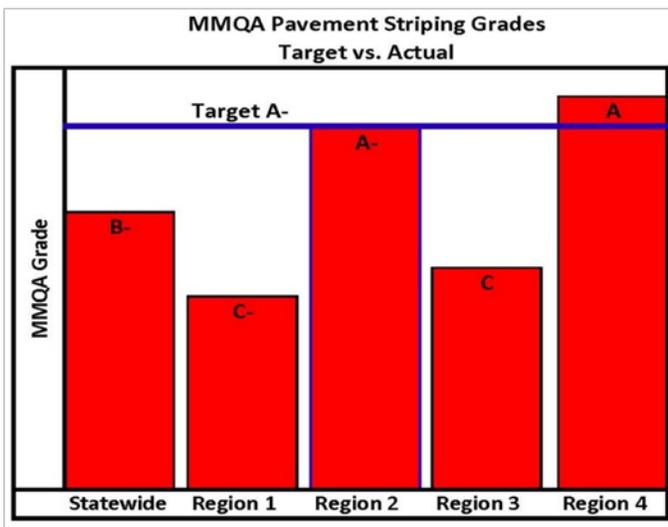


Fig. 3 MMQA Striping Grades

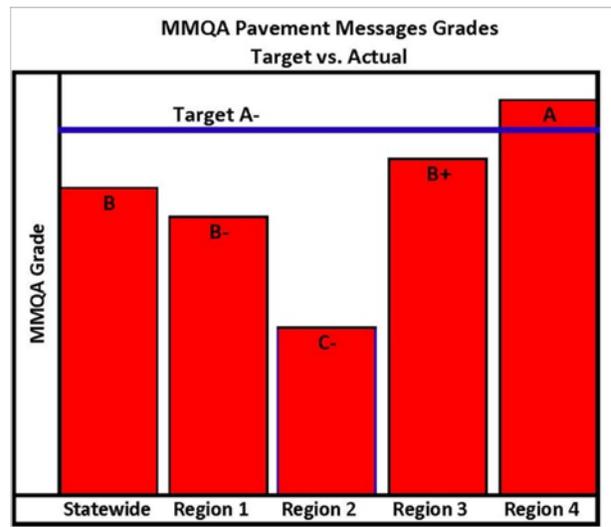


Fig. 4 MMQA Message Grades

Research Tests conducted in the past 5 years have proven that markings recessed slightly below the surface of the pavement last 3 to 5 times longer than surface applied markings. Many miles of markings throughout the state are now being recessed on a regular basis. This is illustrated in Fig. 5.

We are looking for cost-effective, maintainable ways to improve the visibility of pavement markings at night in wet weather. Snow plows preclude the use of raised pavement markers. Adding special wet night beads, at a slightly higher cost, to recessed markings has initially shown promise in improving wet night visibility, as shown in Fig. 6.



Fig. 5 Recessed Stripe

Future Vision Pavement markings are a high priority for UDOT. We are always looking for ways to improve the reliability of the products we are using. We are constantly looking for new products and technologies that are both cost effective and provide long term durability. Reducing impact to the public during our painting operations is also a priority. We are working with pavement marking supply industry to develop new products that will provide a higher durability and reduce the impact to the traveling public.



Fig. 6 Wet Night Beads in Recessed Paint