

RESEARCH NOTES

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ENGINEERING SERVICES SECTION
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RAISED AND RECESSED PAVEMENT MARKERS

In March, we surveyed all region traffic engineers, ODOT districts and several other state departments of transportation. The survey data collected included the estimated length of service for different types of markers, the most common mode of failure, and any ideas on improving the slot design for recessed markers to reduce the amount of standing water that collects in them. Following is a compilation of the answers we received.

ODOT RESPONSES:

Based on the information from eight offices, it appears that the recessed pavement markers last, on the average, 9 to 18 months longer than the raised pavement markers. Of the two reported brands used, Ray-O-Lite markers lasted from 18 to 42 months, depending on the application and the Stimsonite markers lasted 12 to 24 months. The most common form of failure reported is the loss of reflectivity from snow plowing, sanding and studded tires. Region 1 indicated that the high ADT also contributes to the markers' failure. Regions 4 and 5 do not use raised or recessed pavement markers. Region 4 tried recessed markers but elected not to replace them after they lost all reflectivity in one winter due to studded tires.

Some proposed alternatives for removing standing water in the slots included:

- 1) Using a thicker "F" mix overlay to allow better drainage;
- 2) Using longer slots;
- 3) Angling the slot so at least half the button is showing; and
- 4) Filling the slots completely with a hot thermoplastic material with reflective beads.

A comment that was made more than once, was that a better way of marking our travel lanes should be developed. One suggestion was to use a tape consisting of 1/2 DuraStripe and 1/2 non-degradable tape 4" wide and 6" long. Another was to use DuraStripe instead of opaque buttons.

SUMMARIES OF CURRENT TRANSPORTATION RESEARCH

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OTHER STATE DOTs RESPONSES:

Of the four states that responded to our survey only California uses recessed pavement markers. Generally, recessed markers are allowed only for locations between elevations 1000 and 3000 feet above sea level. The Idaho Transportation Department has very limited experience with raised or recessed markers. Their markers have been replaced with paint successfully. Both Nevada and Washington do not have any recessed pavement markers.

As an improved slot design alternative, California suggests tapering on both sides of the marker to improve drainage.

CONCLUSIONS:

The anticipated useful life of the markers is a direct correlation between ADT, the number of times the roadway is sanded and plowed and the number of studded tire passes. Of the ideas suggested, the easiest way to improve drainage might be to mill longer slots and angle them slightly. Considering the overall problems, perhaps a replacement for markers should be investigated more thoroughly.

The success of this study lies in collecting accurate field data and ideas for further consideration. If you have any comments, ideas or would like more information, please contact:

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