

MATERIALS & RESEARCH DIVISION

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RESEARCH UPDATE

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OPTI-GUIDE Optical Pointer for Pavement Marking Vehicles
(Final Report)

REFERENCE: Work Plan 92-R-4

HISTORY:

In early 1992 the Maintenance Division, Traffic Marking Subdivision, decided to address a long standing safety issue. All the Agency's pavement marking vehicles used a boom attached to the front of the truck to guide the truck's path by providing an aiming point a minimum of 10' ahead of the vehicle. When the truck passes through intersections, the boom precedes the truck and, with its low profile, is sometimes not seen by other users of the road. Rapid maneuvering by marking vehicles is occasionally necessary to avoid collisions.

The device selected for trial in an attempt to reduce this hazard is the OPTI-GUIDE, manufactured by Linear Dynamics, Inc. of Montgomery PA. The device mounts on the front of a marking vehicle outside the windshield. In use, the operator looks through a sight at the aiming point 15' ahead of the vehicle. A light projects a cross and several concentric rings onto one of the sight's lenses. By keeping the cross within the rings and aligned with a guide point on the highway, the operator guides the path of the vehicle.

STATUS:

The device was received in early April 1992 and by April 22, had been installed on a new vehicle. The assigned operator of the vehicle, and mechanics from the Vt Agency of Transportation Central Garage, performed the installation, which was observed by personnel from Research and Development. There was some confusion at first because the installation instructions were vague and the installation had to be postponed pending receipt of more information. Due to the design of the vehicle, which was different from those shown in the instructions, the lower support bracket, supplied with the unit, could not be used. Extension arms were manufactured in the Central Garage machine shop in order to mount the support bar. The support bar, which was too short, did not permit windshield wiper clearance. The bar was lengthened and the extension arms were modified. During installation it was also discovered that the projected image was upside down; however, since repair will require the dismounting of the instrument and its return to the factory, it was decided to wait until winter when repair can be accomplished without disrupting the work schedule.

The unit was placed in service and has been operative throughout the pavement marking season.

OBSERVATIONS:

The primary researcher was the vehicle's assigned operator, who has 16 years of pavement marking experience. In his opinion the Opti-Guide, although accurate, is less precise than the boom, but much safer. The truck is more maneuverable without the boom (pointer) extended in front of the unit, especially when working around curbing, islands, and when turning around.

The target needs to be brighter and it rotates in use as well as being upside down. However, this is not critical to operation.

When painting on Class Two highways the truck tends to tilt more with the roadway superelevation but the sight allows compensation by guiding on the left of the two centerlines instead of the geometric center. The experience of the operator is very critical in anticipating the roll of the vehicle with either system but slightly more so with the Opti-Guide.

On a sunny day when driving into the bright sun the image will wash out and the magnification of the sun light causes the driver to have to look away. This problem could probably be solved by using a polarized lens to reduce the glare.

COST:

The unit cost was \$2,235.00 FOB Detroit. With a freight charge of \$15.00 The total purchase cost was \$2,250.00. Since the unit was being installed as part of the preparation of a new vehicle, the installation cost was not itemized; however the Shop Foreman estimated that ten hours were required, which at the standard unit labor cost would have totaled \$250.00 for installation. Had the instructions been clear, less time would have been involved in installation and modification of the mounting system. With clear instructions it is estimated that only 6 hours would have been required, reducing installation cost to about \$150.00. The estimated total cost to purchase and install was about \$2,500.00.

CONCLUSION:

Overall the unit has performed satisfactorily despite the problems with the projected image. An experienced operator has learned to use the unit with little or no difficulty, and is satisfied with its performance.

RECOMMENDATION:

Approval of this product as an alternative to the present system is recommended.

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