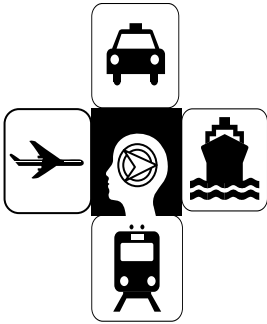


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Tech Brief

Testing and Evaluation of Graduated Driver License Marker

NJ-2008-001

November 2008

SO, HERE'S THE PROBLEM



The NJ Teen Driver Safety Study Commission issued a report to the Governor and Legislature in March of 2008 in response to concerns over the growing level of fatalities and teen driver injuries in New Jersey. One of the recommendations from the Commission's report identifies the need to mark vehicles operated by mostly teen Graduated Driver License (GDL) drivers to aid in enforcement of the GDL law. No other U.S. states have a legal requirement to identify GDL drivers by a

marker on a vehicle. It was determined that the marker would be placed on the standard New Jersey license plate and needed to be tested quickly so that the legislature could endorse specific requirements for the marker in the coming months.

AND HERE'S OUR SOLUTION



Six technologies were identified to meet the requirement for a removable tag on the vehicle license plate. After review of documents and discussion with vendors, two technologies were field tested, a hook-and-loop, or Velcro, fastener, and a magnetic fastener. Both had two pieces, a base which attached to the license plate with adhesive and a top piece with a reflective sticker.

Based on the field test and further review of product specifications, the hook-and-loop fastener is recommended as the preferred technology for this application. A retroreflective sticker was tested as well. Both the durability and the visibility of the stickers tested were not satisfactory. A draft specification was prepared to help address

these deficiencies when the stickers are put out to bid. It is proposed that the successful vendor conduct a field test of the attachment devices and the stickers, prior to full deployment, using approximately 500 to 1,000 devices.

INTRODUCTION

The objective of this project was to assist New Jersey Motor Vehicle Commission in determining the feasibility of a removable visual marker for Graduated Drivers License (GDL) drivers. The NJ Teen Driver Safety Study Commission issued a report to the Governor and Legislature in March of 2008 in response to concerns over the growing level of fatalities and teen driver injuries in New Jersey. One of the recommendations from the Commission's report identified the need to mark vehicles operated by mostly teen Graduated Driver License (GDL) drivers to aid in enforcement of the GDL law. The marker will assist law enforcement in identifying GDL holders who may be violating GDL restrictions such as nighttime curfew and too many passengers. No other U.S. state has a legal requirement to identify GDL drivers by a marker on a vehicle and no other U.S. state has a removable marker on its license plate. The challenge of the project was to identify a marker that would be suitable for this application.

WHAT SOLUTION IS PROPOSED?

A hook-and-loop, or Velcro, fastener is recommended as the preferred technology for this application with a retroreflective sticker on the surface. The sticker will be a solid lime-green color without lettering. Multiple tags will be provided to each GDL driver since any removable sticker is likely to be lost on occasion.

A draft specification has been prepared for procurement of these tags and stickers. It is recommended that the successful vendor conduct a more extensive field test of both the attachment devices and the stickers, using approximately 500 to 1,000 tags in a limited geographical area. The test should be similar to the durability and visibility tests conducted for this project, but should extend over several months. This will provide an opportunity to identify problems before full deployment of the program takes place.

HOW DID WE ARRIVE AT THIS SOLUTION?

The research conducted for this project involved the following activities:

- **We scanned international GDL marking efforts** – While there are a number of jurisdictions around the globe that use GDL identifiers, none of them were found to be using an identifier that is affixed to the license plate. No other U.S. state currently is requiring the use of display plates or other identifiers for novice drivers. As a result, New Jersey is at the forefront of GDL identifier implementation in the United States and other states will be watching to see the results of these efforts.
- **We identified potential materials for consideration** – A potential list of materials for use as a removable GDL sticker was identified in the NJ Teen Driver Safety

Study Commission report. A set of evaluation criteria were developed at the outset of the project, including size, durability, attachment properties, and visibility. These options were researched and evaluated based on available published information and discussions with vendors. Three of the six options considered were determined to have fatal flaws and one was not available for testing. Two options ultimately identified for field testing:

- Hook-and-loop, or Velcro, fasteners.
- Magnetically receptive material mounted to plate with magnet-backed marker.
- **We conducted a field test of the materials** – A field test was designed by the consultant team and conducted by New Jersey State employees from October 8-15, 2008. Two variations of each technology were tested:
 - Hook-and-loop fastener with clear base.
 - Hook-and-loop fastener with black base.
 - Magnet – flexible.
 - Magnet – rigid.

Both types of fasteners were tested with a retroreflective marker showing the letters GDL. Two colors were tested – green and yellow.



Tags were attached to the license plate with an adhesive base. In addition to the durability and attachment properties of the tags, the field test provided an opportunity to test the durability of the stickers. Personnel involved in the field test were provided with a set of instructions and asked to detach and reattach the tags with each use of their car. They also were asked to take the vehicle through a mechanical carwash at least once during the test period. Some of the participants conducted independent testing, including placing the tags in warm water and freezing them. These tests provided useful information on potential problems with the tags.

The hook-and-loop, or Velcro, fastener is recommended as the preferred technology for this application for the following reasons:

- While both technologies performed adequately in a limited field test, the hook-and-loop fasteners were returned in better condition and appeared to significantly be more durable than the magnets. Magnets easily can be broken after being twisted and bent, while hook-and-loop fasteners are very difficult to damage.
- Hook-and-loop fasteners are an established product in use for applications similar, if not identical, to this one. Documentation is available to provide confidence that these fasteners will work effectively. Test results available for peeling, shear, and tensile strength and specifications show that the material is resistant to most chemicals, dust, moisture, and UV rays. Similar documentation is not available for the magnetic fasteners.
- Hook-and-loop fasteners provide the option for a single vendor to provide everything that is needed for the application. This is not the case with other technologies.

- **We conducted a focus group with state law enforcement** – A focus group was conducted with state police representatives, NJDOT staff, and NJMVC staff to evaluate the project findings and discuss next steps toward implementation. During a visibility test, participants noted that the colors tested were not adequately visible to oncoming law enforcement personnel and that a brighter color is needed. They also noted that a solid color marker without lettering is adequate, and that both front and back license plates should be tagged. Although they will not solve all the issues, the markers will provide law enforcement with one more tool to help identify GDL drivers and thus will help them enforce the law. The markers will increase driver compliance with GDL laws as drivers know the marker will draw increased attention from enforcement.
- **We prepared a specification for hook-and-loop fasteners and retroreflective markers** – This was provided as part of the project report.

RECOMMENDATIONS – WHAT ARE THE NEXT STEPS TO MAKE THIS PROGRAM A SUCCESS?

- The stickers that were tested did not perform as well as the fasteners and had a tendency to crack. The draft specification has been tightened to address this but more discussion is needed with vendors to assure that frequent attachment and detachment does not destroy the sticker.
- The green and yellow stickers used during the field test were not readable by a vehicle passing in the opposite direction. A brighter color that stands out more from the license plate will be required.
- Tags are likely to be lost or misplaced on a regular basis, which will add to the difficulty of enforcement. It is recommended that multiple tags be provided to each GDL driver and that a Velcro attachment for a keychain be provided as well.
- Before implementing the program statewide, it is highly recommended that the successful vendor conduct a more extensive field test with approximately 500 to 1,000 tags. This test should be conducted in a limited geographic area so it can be easily monitored by DOT, MVC, DHTS, and NJSP. Tags should be distributed and used by a sample of GDL drivers for two to four months before placing the full order for a statewide program. This test will help to identify any potential problems with performance, durability, and visibility that did not surface in the shorter test conducted for this project. It also will help to determine how frequently tags are lost and provide a better idea of how the distribution system should work.



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A final report is available online at:

<http://www.state.nj.us/transportation/refdata/research/>

If you would like a copy of the full report, please FAX the NJDOT, Bureau of Research, Technology Transfer Group at (609) 530-3722 or send an email to Research.Bureau@dot.state.nj.us and ask for:

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