



DASMA
Door & Access Systems
Manufacturers Association
International

GATE OPERATOR & ACCESS CONTROL POINT SYSTEMS DIVISION

TECHNICAL DATA SHEET

#354

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Loop Systems and Depth in Road Pavements

Introduction

The relationship between loop systems and road pavements must be such that installation of the “underground loop” (the continuous piece of wire that is embedded into pavement) must not interfere with the structural capacity of the roadway, and the roadway must not interfere with the performance of the loop system. The installation of a loop system into an existing road pavement may have an effect on some aspect of the pavement. Conversely, the installation of road pavement material after a loop system has been preset in place may also affect the performance of the loop detector. This Technical Data Sheet will describe these potential effects and offer some possible solutions and items to consider.

Concrete Pavement

Concrete pavement is intended to provide bearing support, and in many cases structural support, to vehicular traffic. Structural support is particularly critical on bridges and other places where pavement must longitudinally span over a gap beneath the pavement. Typically, the concrete is reinforced with horizontal rebar. The upper rebars are covered by at least one inch of concrete from the top surface of the roadway.

Common underground loop installations require either a 1-½ inch deep groove or a 2-inch deep groove. Grooves up to 1” deep are usually of no concern regarding any structural effect on the roadway, but those greater than 1 inch run a risk of cutting into critical rebar components, thus placing the structural capacity and integrity of the roadway or bridge at a potential risk. If a groove deeper than 1 inch is required, either a qualified engineer should be consulted to consider various options or the loop should be redesigned to allow no more than a 1-inch groove to be cut in the roadway pavement.

Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.

This Technical Data Sheet was prepared by the members of DASMA's Operator & Electronics Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

Asphalt Pavement

Typically, asphalt pavement is intended to provide primarily bearing support to vehicular traffic. It is not intended to exist as, or contribute to, the flexural structural performance of a roadway.

The concern with installing a loop wire in an asphalt pavement may lie in the depth of the groove relative to the overall depth of the asphalt pavement itself. It is important to keep water from reaching the roadbed material. If the saw cut is too deep, the asphalt under the saw cut may crack over time, creating a possible path for water into the road bed material. One guideline to consider would be to try not to exceed 25% of the overall asphalt pavement depth when cutting a groove for a loop wire.

If a preformed loop wire is being installed in a roadway before the asphalt is poured, the asphalt hotmix may have an effect on the integrity and performance of the loop wire. It is suggested that the paving contractor be contacted to determine the estimated temperature at which the hotmix would be poured, and this temperature should be compared with the maximum recommended temperature to which the loop wire should be subjected.

IMPORTANT INFORMATION

Any time a structure support surface, such as a bridge, overpass, tunnel, parking garage, etc., is modified, a structural engineer should be consulted. Most of these types of structures are government owned and maintained and require engineering approval of the appropriate government agency before any modification can be made to a structure support surface.

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