

RESEARCH PAYS OFF



Problem Motorists are keenly aware of the unpleasant bumps experienced at manhole covers during highway resurfacing. The problem is especially acute in urban areas where there can be as many as a dozen or more manholes in one block. The usual practice is to raise the manholes a month or more before the paving operation,

which results in a long period of inconvenience and discomfort to motorists. The typical construction procedure consists of raising the manhole by means of an additional masonry course and reinstalling the old frame. The raised manhole could slow traffic, pond water, and contribute to poor public relations.

Solution As part of a New Jersey Department of Transportation research study, a new procedure was developed that involves the use of a bedding compound plus bolts to anchor the cast-iron extension frames securely. Initially, inlet extensions were secured with bolts placed in the outside lane of a heavily traveled state highway that carries more than 37,000 vehicles per day (18 percent trucks). These inlet extensions continue to perform successfully after 6 years in use.

A subsequent development involves the use of an epoxy as both a bedding and bonding compound, thus eliminating the need for the bolts.

This procedure was used on a project that was constructed in 1980, in which over 100 epoxy-bonded manhole extension rings were successfully placed on badly worn and cracked municipal and county manhole frames, some dating back to 1913.

Application A set of guidelines and specifications for the procedure and the materials for adjusting manholes and curb inlets with an epoxy bonding compound was developed and incorporated into the standard specifications.

The following procedure was developed for the installation of the manhole extension by a three-man crew (excluding traffic protection). The old frame is cleaned with a wire brush and wiped with degreasing liquid (Figure 1). A two-component, rapid-setting epoxy is applied to the old frame from a preportioned mixing and dispensing device (Figure 2). The extension unit is seated on the epoxy head (Figure 3), and the cover is replaced (Figure 4). The entire operation takes as little as 15 minutes; and paving or feathering with hot or cold asphalt mix can take place 1 hour later.

Figure 1. Manhole ring is cleaned with wire brush and degreasing solution.

Figure 2. Application of two-component, epoxy bonding material.

Figure 3. Seating extension ring on the manhole.

Figure 4. Replacing cover on extended manhole.



New Jersey DOT Develops Improved Procedure for Adjusting Manholes

Benefits This research effort has led to savings of both time and money. Application of the new procedure has resulted in construction cost savings of \$230 to \$270 per inlet on New Jersey DOT projects. The procedure, which has been applied to the resetting of some 800 inlets and 200 manholes, has saved the Department approximately \$200,000. It is estimated that continued use of the new system to reset 800 to 1,000 inlets and 200 to 400 manholes annually on state resurfacing projects will save \$225,000. As counties and municipalities in New Jersey continue to adopt the new system for resetting manholes and inlets on projects, it is conservatively estimated that the overall savings within the state could be as much as four times the state DOT savings, approaching one million dollars per year.

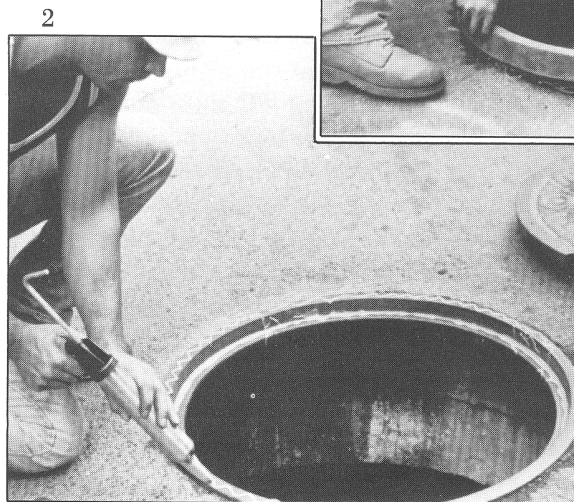
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