MANUAL FOR CONTROLLING AND REDUCING THE FREQUENCY OF PAVEMENT UTILITY CUTS

Executive Summary

Introduction

This manual for controlling and reducing the frequency of pavement utility cuts was developed to provide information to states and municipalities as they try to protect their infrastructure and maintain control of access to their rights-of-way. The manual addresses two major topics: *Controlling Pavement Cuts by Implementing Policy* and *Reducing Pavement Cuts by Integrating Technology*. On the policy side, several different types of policies and regulations are presented, with case studies and sample ordinances and regulations. The technology portion of the manual gives a brief overview of various trenchless technology methods, their advantages and disadvantages, and other pertinent information about implementing this type of technology in utility construction. The information contained in this manual should be used as a starting point for an investigation into the types of policies and technologies available to the public sector to help control and possibly reduce the frequency of pavement utility cuts in the national and local infrastructure.

The primary audience of this manual is the state and local utilities and ROW manager charged with the responsibility of protecting and regulating an agency's rights-of-way. With such a substantial responsibility, mixed with constrained resources yet ever-increasing demands from utility providers, state and local highway agencies must find ways to manage and control access to the ROW. By so doing, they attempt to preserve the functional life of ROW assets and minimize the life-cycle cost of the facilities.

The manual is organized into five sections. The first two sections give a general background of the problems that have arisen throughout the United States, and preview potential solutions to these problems. Section 3 describes the policies that may be implemented by various local and state agencies to control the frequency of pavement utility cuts. Section 4 discusses the technology available for reducing the frequency of these cuts by encouraging trenchless technologies, where possible, and in reducing the impact to existing facilities (utilities or public assets) when using either open-trench or trenchless methods. Section 4.5 presents several innovations that are being or may be used in the near future to reduce the requirements for open-trenching methods of utility construction and maintenance even further. Section 5 highlights recommended policies and practices for controlling and reducing the frequency of utility cuts in highways and streets throughout the nation.

Objectives

The primary objective of this manual is to provide help to the state and local ROW and utility managers in controlling and reducing the frequency of pavement utility cuts. The two major sections of this manual provide guidance in the areas of policy and technology, as each relates to the control and reduction of utility cuts. Secondary objectives of the manual include making information available to agencies, utility companies, and other organizations about such policies and technologies. Although the manual cannot address all available information about the subjects, it includes references to other sources covering a very broad range of topics.

Information regarding potential policies that agencies may support in order to control the frequency of utility cuts in pavements is included in this manual, as well as sample ordinances and regulations that have

been used successfully by other agencies. The manual also includes information regarding potential difficulties and complications that enacting agencies should avoid.

Recommendations

This manual has presented some alternative construction methods to trenching and some policies that can be promoted and implemented by cities, counties, and states throughout the United States. Two major recommendations can be made as a result of the development of this manual. First is that the policies presented herein be evaluated and their implementation attempted. Not all policies presented in this manual will be appropriate for every agency, however. Many of these policies can be modified and tailored to the specific needs of many agencies throughout the nation.

Three types of policies were identified that are designed to encourage alternative behavior with respect to utility cuts. These are incentive-based, fee-based and requirement-based policies. Each type of policy can affect the frequency of pavement utility cuts by placing explicit requirements on those cutting the pavement (requirement-based); by making pavement utility cuts more expensive by imposing appropriate fees in order to recover the true cost of the cuts (fee-based); or by providing an incentive to use new technologies where appropriate (incentive-based). Overall, these policy recommendations can help public agencies reduce the frequency of pavement utility cuts, and thereby reduce the rate at which the local and national infrastructure deteriorates due to such cuts.

The recommended policies include:

- ***Incentive-Based.***
  Incentives to Encourage Use of Trenchless Technology.
  Incentives to Encourage Less Damaging Types of Cuts.
  Encourage Coordination – Shared Trenching.
  Encourage Coordination – Shared Resources.

- ***Fee-Based.***
  Assess Appropriate Rights-of-Way Fees.
  Assess Appropriate Pavement Degradation Fees.
  Assess Appropriate Permit Fees.
  Assess Lane-Rental Fees.
  Require Deposits to Protect Against Poor Repairs.
  Assess Penalties for Non-Compliance or Failed Repairs.

- ***Requirements-Based.***
  Require Agency-Owned Utilities to Meet Repair Quality Standards.
  Require Justification for Not Using Trenchless Technology.
  Establish Moratorium Periods for New Pavement.
  Require Repaving Area Larger than Cut to Mitigate Pavement Damage.
  Enhance Inspection and Enforcement of Specification Requirements .

The second recommendation is that the methods of trenchless technologies be encouraged where possible and practical. Again, not all methods are suited for all situations, and some situations may not be suited for any type of trenchless technology. However, most agencies and geographic locations can successfully encourage the use of some of these methods to improve their control over, and to try to reduce the frequency of, pavement utility cuts in the public ROW. Trenchless technologies have become more popular in recent years as the cost and probability of encountering existing facilities have decreased and the probability of success has increased. Many city and state agencies are using or specifying the technology, and have had great success. Some have had bad experiences, but the industry is constantly trying to improve

the chances for success, and it is hoped that the bad experiences will diminish over time as the industry improves. The trenchless technology and other methods that were discussed in this report include the following:

- ***Trenchless Technology Methods.***
  Horizontal Directional Drilling (or Guided Boring)
  Auger and Slurry Boring
  Pipe Jacking and Microtunneling
  Impact Moling and Ramming (or Thrust Boring)
  Pipe Bursting

- ***Other Components.***
  Selecting the Appropriate Methods
  Advantages and Limitations of Each Method
  Cost Analysis
  Safety
  Project Planning
  Subsurface Utility Engineering
  Other Technologies and Methods

Users of this manual are encouraged to evaluate the policies and technologies discussed in the report, and to use the samples in the appendices to begin to develop policies, ordinances, regulations, and specifications of their own. The samples in the appendices are actual documents that have been used successfully by various city and state agencies. Beginning with these examples, any city, county, or state right-of-way, public works, or highway agency can develop a program for both controlling pavement utility cuts within their jurisdiction and reducing their frequency.