EARTHQUAKES AND BURIED PIPELINES: MEXICO CITY 1985 AND BEYOND

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This paper is divided into three sections. In the first section, information on seismic damage to buried pipelines in Mexico City caused by the 1985 earthquake is reviewed. The repair and restoration techniques that were used are discussed as are as proposed plans to reduce system vulnerability and system restoration time for future earthquakes.

With the Mexico City experience as a backdrop, the second section presents a brief review of the present state of the art for seismic analysis and design of water distribution and sewer collection systems. Available methods for identifying and analyzing seismically vulnerable elements as well as available criteria for design are assessed.

In the final section, prioritized needs concerning water and sewer systems subject to earthquakes are presented. Specifically, the needs for improved pipeline joints, laboratory test, engineering analysis tools, and design criteria are discussed as is the need for developing and implementing emergency plans.

MEXICO CITY 1985

Background

The author visited Mexico City in October 1985, approximately one month after the Guerrero-Michoacan earthquake. The purpose of this consulting visit was to review damage to the water distribution and sewer collection systems in the city and to make recommendations to the Pan American Health Organization (PAHO) and the Mexican Secretaria de Agricultura y Recuros Hidraulicos (SARH). The recommendations centered around immediate repair and restoration of the existing systems, improvements to the existing systems, and planning for future earthquakes. This section summarizes the information gathered during this October 1985 visit. Since the water and sewer systems in Mexico City are similar in many respects to those in the United States (similar components, sizes, materials, etc.), it is felt that the Mexico City experience provides useful lessons for U.S. practice.