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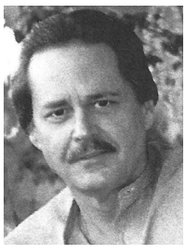

Martin Rene Asbra
1945–2012

The members of the Earthquake-Actuated Automatic Gas Shutoff Systems Standards Committee of the Structural Engineering Institute respectfully dedicate this edition of the standard in the memory of Martin R. “Marty” Asbra, who passed away in Tracy, California, in the spring of 2012. Marty was an ardent believer in the value of seismic valves and a founding member of this Committee.

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PREFACE

Initiation of a standard for earthquake valves began in 1977 with a request from the American National Standards Committee Z21 to the Automatic Valve Working Committee of the Z21 Subcommittee on Standards for Gas Appliance Control Devices, which appointed an Earthquake Valve Working Group in 1978 to prepare a draft standard.

The ensuing draft standard was distributed for review and comment in mid-1979. A revised draft standard was adopted by the American National Standards Committee Z21 by letter ballot in December 1979. The first edition of a standard for earthquake valves—ANSI/AGA Z21.70, *Earthquake-Actuated Automatic Gas Shutoff Systems*—was approved as an American National Standard by the American National Standards Institute on April 16, 1981.

In 1981, the secretariat for the standard was transferred from the American Gas Association to the American Society of Mechanical Engineers (ASME). The ASME committee that was assigned responsibility for the standard did not initiate any changes. In 1991, a proposal was approved for the formation of a Pre-Standard Committee within the Gas and Liquid Fuel Lifelines Committee of the Technical Council on Lifeline Earthquake Engineering (TCLEE) of the American Society of Civil Engineers (ASCE) to revise ANSI Z21.70.

A full standard committee was formed in late 1992 and met for the first time in early 1993. The Committee was formed of manufacturing, engineering, local and state government, and insurance representatives.

The extensive data collected following the January 17, 1994, Northridge, California, Earthquake (hereafter referred to as the Northridge Earthquake) provided a unique opportunity to assess the risk posed to the public by natural gas–related postearthquake fires and ground motions for which automatic gas shutoff would be beneficial. The Committee met in the months following the Northridge Earthquake and finalized the scope of research needed to support development for a revised standard.

The Committee focused its research on two key areas: (1) dynamic testing of current devices, which was needed to quantify performance characteristics; and (2) in-depth examination of Northridge Earthquake data on ground motions, structural damage, fire initiation, and actuation of existing earthquake-actuated automatic gas shutoff devices.

A proposal to perform research in these two areas was prepared for ASCE by the Committee, and the project was jointly funded by FEMA, natural gas utilities, and shutoff-device manufacturers. The research project was initiated in March 1995 and completed in November 1995.

Performance characteristics of the devices tested were determined and evaluated for both discrete dynamic loads and complex motions (e.g., simulated ground motions). The results of the dynamic testing of devices that were then on the market bracketed the ranges that were used in defining the actuation requirements in response to seismic disturbances.

The second edition of the standard, ASCE 25-97, was published in 1999. The third edition of the standard, ASCE 25-06, was published in 2008. The present edition—ASCE 25-16, *Earthquake-Actuated Automatic Gas Shutoff Devices*—is the fourth edition of the standard.