ATC-24

Guidelines for Cyclic Seismic Testing of Components of Steel Structures

by
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555 Twin Dolphin Drive, Suite 550
Redwood City, California 94065
Telephone: (415) 595-1542

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Prepared for ATC by
HELMUT KRAWINKLER
Department of Civil Engineering
Stanford University
Stanford, California 94305

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Preface

In 1988 Applied Technology Council (ATC) commenced the ATC-24 project to develop standardized procedures for seismic testing of components of steel structures. The need for the project arose from the recognition that results from numerous previous laboratory experiments nationwide have been difficult to interpret and assess. Contributing to this difficulty has been the variation in selected loading histories and the variation in presentation of test results.

In recognition of these difficulties, the American Iron and Steel Institute (AISI), the National Center for Earthquake Engineering Research (NCEER), the American Institute for Steel Construction (AISC), and the National Science Foundation (NSF) jointly awarded ATC funding, beginning in 1988, to develop guidelines that would assist in preparation, execution, and documentation of experiments that are performed to evaluate load-deformation characteristics and to assess the seismic performance of structural steel components.

The recommendations and companion commentary presented in this report pertain to loading histories, presentation of test results, and other aspects of experimentation, which can be employed in most cyclic experiments on components of steel structures for the purpose of consistency in experimental procedures and test evaluation. These recommendations are written specifically for experiments with slow cyclic load application. Issues associated with other experimental methods are not addressed.

Professor Helmut Krawinkler, Department of Civil Engineering, Stanford University, served as the project subcontractor and prepared this report.

The ATC-24 Project Engineering Panel, who provided overall review and guidance for the project, were: Vitelmo V. Bertero, Douglas A. Foutch, Peter Gergely (NCEER Representative), Subhash C. Goel, James O. Jirsa, Le-Wu Lu (ATC Board Representative), Joseph Nicoletti, Guy J. P. Nordenson, Egor P. Popov, Allan R. Porush, Nigel M. J. Priestley, and Edwin G. Zacher. RDD Consultants of Boulder, Colorado, prepared the camera-ready copy. The affiliations and addresses of these individuals are provided in the list of project participants.

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Christopher Rojahn (Principal Investigator)
Executive Director

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