



Background Document

Protocol for Fabrication, Inspection, Testing, and Documentation of Beam-Column Connection Tests and Other Experimental Specimens

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SAC Joint Venture

a partnership of:

Structural Engineers Association of California (SEAOC)

Applied Technology Council (ATC)

California Universities for Research in Earthquake Engineering (CUREe)

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THE SAC JOINT VENTURE

SAC is a joint venture of the Structural Engineers Association of California (SEAOC), the Applied Technology Council (ATC), and California Universities for Research in Earthquake Engineering (CUREe), formed specifically to address both immediate and long-term needs related to solving the problems of the Welded Steel Moment Frame (WSMF) connection. SEAOC is a professional organization composed of more than 3,000 practicing structural engineers in California. The volunteer efforts of SEAOC's members on various technical committees have been instrumental in the development of the earthquake design provisions contained in the Uniform Building Code as well as the National Earthquake Hazards Reduction Program (NEHRP) Recommended Provisions for Seismic Regulations for New Buildings. The Applied Technology Council is a non-profit organization founded specifically to perform problem-focused research related to structural engineering and to bridge the gap between civil engineering research and engineering practice. It has developed a number of publications of national significance including ATC 3-06, which serves as the basis for the NEHRP Recommended Provisions. CUREe is a non-profit organization formed to promote and conduct research and educational activities related to earthquake hazard mitigation. CUREe's eight institutional members are: the California Institute of Technology, Stanford University, the University of California at Berkeley, the University of California at Davis, the University of California at Irvine, the University of California at Los Angeles, the University of California at San Diego, and the University of Southern California. This collection of university earthquake research laboratory, library, computer, and faculty resources is among the most extensive in the United States. The SAC Joint Venture allows these three organizations to combine their extensive and unique resources, augmented by subcontractor universities and organizations from around the nation, into an integrated team of practitioners and researchers, uniquely qualified to solve problems related to the seismic performance of WSMF structures.

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PREFACE

To ensure that the various experimental tasks undertaken in the Phase 2 Steel Project produce consistent and comparable data, this document has been developed to guide fabricators, inspectors, and researchers through the process of constructing, instrumenting, loading, and reporting results for experimental specimens. The focus is on large-scale beam-column connection subassemblages, but many of the procedures are also applicable to smaller specimens such as mock-up weldments. This document is intended for use by investigators in the Phase 2 Steel Project and presents only test procedures and methods. It does not address issues of acceptance of test results or suitability of details utilized for a particular application.

The scope of the document covers controls on steel materials and materials testing requirements, detailed fabrication and inspection provisions for both welded and bolted joints, considerations for test set-up and instrumentation of large-scale steel beam-column connection specimens, applied displacement loading histories consistent with anticipated seismic demands on connections, and data reduction and reporting protocols. Many of the provisions are included as stand-alone appendices. Checklists for simplified fabrication and test reporting are provided. Submittal requirements are noted throughout the document.

Numerous individuals and organizations involved in the Phase 2 Steel Project contributed to the development of this document, including Topical Team Leaders, Lead Guideline Writers, Technical Advisory Panel members, testing subcontractors and workshop participants. Patrick Hassett of Hassett Engineering, David Long of PDM Strockal, and Robert Pyle of the American Institute of Steel Construction were particularly helpful. The efforts of all of these individuals are gratefully acknowledged.

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