ATC/BSSC REGIONAL TRAINING SEMINAR:
NEHRP GUIDELINES FOR THE SEISMIC REHABILITATION OF BUILDINGS
(FEMA 273)
San Francisco, California
June 29th and 30th, 2000

Program

Thursday, June 29, 2000, 9:00 a.m. – 3:00 p.m.

1.	**Introduction** Seminar purpose and agenda; guidelines development process and participants; seminar handouts; companion volumes	9:00 a.m.	Moderator: Gerald Brady, ATC
2.	**Issues in Seismic Rehabilitation** Seismic deficiencies, as exemplified in past earthquakes; nonlinear response of components and systems; need for nonlinear analysis or explicit recognition of nonlinear behavior; evaluation of example buildings, illustrating deficiencies, corrective measures, and cost of rehabilitation.	9:05 a.m.	Chris Poland
3.	**Overview of the Guidelines—New Seismic Hazard Maps** Purpose; relation to other documents; significant new features, including performance levels, rehabilitation objectives (combination of performance level and seismic hazard level), systematic and simplified rehabilitation methods, and new analysis procedures; consideration of historic building issues; flowchart for the rehabilitation process; contents by chapter; new seismic hazard maps.	9:45 a.m.	William Holmes
Break		***10:25 a.m.***	
4.	**Simplified Rehabilitation—Overview and Example Applications** Brief overview of methodology, including relationship to FEMA 178 *Handbook for Seismic Evaluation of Buildings*; process and criteria (limitations) for choosing simplified rehabilitation, as opposed to systematic rehabilitation, identification of model building types; evaluation of deficiencies; determination and design of corrective measures; example applications involving different building types and local level of seismicity; relationship to FEMA 310, the updated version of FEMA 178.	10:40 a.m.	Chris Poland
5.	**Systematic Rehabilitation—In-Depth Discussion** Process for choosing systematic rehabilitation method, versus simplified rehabilitation method; overview of systematic rehabilitation process; determination of seismic site hazards and as-built conditions; selection of rehabilitation objective (performance level and seismic hazard level); determination of rehabilitation strategy and selection of seismic elements; overview of analysis procedures and their selection; consideration of general design requirements; sizing of components and connections; rehabilitation design verification, including comparison of loads/deformations with acceptance criteria; use of new technologies, such as seismic isolation and energy dissipation systems.	11:25 a.m.	Craig Comartin

Lunch		***12:05 p.m.***	
6.	**Systematic Rehabilitation—Basics of Structural Dynamics, Nonlinear Response, and Acceptance Criteria** Basics of structural dynamics and the earthquake response of buildings; capacity and demand concepts for seismic rehabilitation; seismic analysis, including linear static procedure, in the context of rehabilitation.	12:35 p.m.	Jack Moehle
7.	**Systematic Rehabilitation—Analysis Techniques** In-depth description of four new analysis procedures—linear static procedure, linear dynamic procedure, nonlinear static procedure (push-over analysis), and nonlinear dynamic procedure; criteria for selection of analysis procedures, use of knowledge factor; computer modeling issues and methods; acceptance criteria in each materials chapter.	1:25 p.m.	William Holmes
8.	**Rehabilitation of Nonstructural Components** Purpose and scope; procedural steps; interaction of structural and nonstructural components; deformation-sensitive versus acceleration-sensitive components; analytical and prescriptive procedures; behavior of, and acceptance criteria for, architectural, mechanical, electrical, and plumbing components, and furnishings and interior equipment.	2:25 p.m.	William Holmes

Friday, June 30, 2000, 9:00 a.m. – 3:00 p.m

9.	**Day 2 Introduction** *Guidelines'* future development (BSSC case studies, ASCE standard).	9:00 a.m.	Gerald Brady
10.	**Systematic Rehabilitation—Foundations and Geotechnical Considerations** Identification of site soils and seismic site hazards; mitigation of seismic site hazards; evaluation of foundation strength and stiffness; effects of foundations on overall building performance; soil foundation rehabilitation.	9:05 a.m.	Craig Comartin
11.	**Application of the Systematic Rehabilitation Method to Concrete Components and Buildings** Discussion of concrete framing types; material properties and condition assessment, general assumptions and requirements; example application to a 4-story concrete frame building, including review of initial considerations, selection of rehabilitation objective, selection of initial approach to risk mitigation, implementation of the systematic rehabilitation method and a detailed pushover analysis (the nonlinear static procedure).	9:55 a.m.	Jack Moehle
Break		***11:05 a.m.***	
12.	**Application of the Systematic Rehabilitation Method to Masonry Components and Buildings** Overview of masonry chapter contents, including scope, historical perspective, in-place material properties, condition assessment, knowledge factor, types of masonry walls, anchorages, strength definitions, and acceptance criteria for the linear and nonlinear static analysis procedures; application of the linear static procedure to a 1-story building, including selection of rehabilitation objectives, and estimation of seismic loads and capacities for selected components.	11:20 a.m.	Daniel Abrams
Lunch		***12:20 p.m.***	

13.	**Application of the Systematic Rehabilitation Method to Steel Components and Buildings** Overview of steel chapter contents; material properties and condition assessment; analysis and modeling of steel structures; acceptance criteria; new features applicable to steel components and buildings; application of the linear static procedure to a 3-story building, including condition assessment, selection of rehabilitation objectives, lateral force distribution, and capacity checks for selected components.	12:50 p.m.	James Malley
14.	**Application of the Systematic Rehabilitation Method to Wood Components and Buildings** Discussion of wood building types; special wood issues; yield capacity for wood; application of the linear static procedure (the preferred analysis procedure for wood buildings); application to a 3-story wood-frame office building, including review of initial considerations, selection of rehabilitation objective, selection of initial rehabilitation scheme, and analysis using the linear static procedure with sample calculations and capacity checks for selected components.	2:00 p.m.	John Coil

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