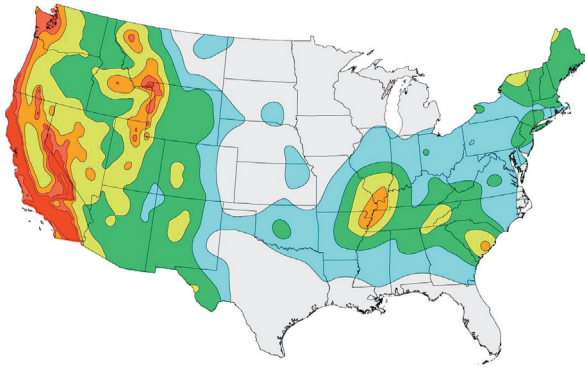


THIRD ATC-35/USGS NATIONAL EARTHQUAKE GROUND-MOTION MAPPING WORKSHOP

San Mateo, California
December 7-8, 2006



Sponsored by the
Applied Technology Council
and the
U.S. Geological Survey

Conducted under the auspices of the ATC-35 Program to
"Transfer U.S. Geological Survey Earth Science Research Results
into Engineering Design Practice."

*Program and
Registration Information*

Purpose of the Workshop. Like the first and second ATC-35/USGS National Earthquake Ground Motion Mapping Workshops, which were held in 1995 and 2001, respectively, this Workshop will provide input from the structural engineering, geotechnical engineering, geosciences, and risk modeling professions to the U.S. Geological Survey on key issues that affect the preparation and use of the next round of national earthquake ground motion maps (and related products). The Workshop will also provide input to organizations responsible for the selection and adoption of ground motion maps in model seismic regulations and actual seismic codes governing the design of buildings, bridges, and other structures. In addition, the Workshop will address potential new map-related products.

Workshop Focus. Examination of the following key issues will be the focus of the Workshop:

- **Issues for Preparation of USGS Probabilistic National Earthquake Ground-Motion Maps**
- **Issues for Selection and Modification of Ground Motion Maps for Use in Design**
- **Map Products and New Directions**

(See Preliminary Program, next page, for details).

Workshop Location

San Mateo Marriott Hotel
1770 South Amphlett Blvd
San Mateo, California 94022
Phone: 650/653-6000

Sponsoring Organizations

Applied Technology Council
201 Redwood Shores Pkwy, Suite 240
Redwood City, CA 94065
Phone: 650/595-1542
Fax: 650/593-2320
www.ATCouncil.org

U.S. Geological Survey
Reston, Virginia
www.usgs.gov



Organizing Committee Maurice Power (Chair),
Ian Friedland, Ronald Hamburger, James Harris, Jack Hayes,
Thomas Holzer, Bruce Johnson, E.V. Leyendecker,
Nicolas Luco, Michael Mahoney, and Christopher Rojahn

Co-Sponsoring Organizations

- **American Association of State Highway and Transportation Officials (AASHTO)**
- **American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI)**
- **Building Seismic Safety Council (BSSC)**
- **Earthquake Engineering Research Institute (EERI)**
- **Federal Emergency Management Agency (FEMA)**
- **Federal Highway Administration Office of Bridge Technology (FHWA)**
- **International Code Council (ICC)**
- **Mid-America Earthquake Center (MAE Center)**
- **Multidisciplinary Center for Earthquake Engineering Research (MCEER)**
- **National Council of Structural Engineers Associations (NCSEA)**
- **National Fire Protection Association (NFPA)**
- **National Institute of Standards and Technology (NIST)**
- **Pacific Earthquake Engineering Research Center (PEER)**

Registration Information. The Workshop is open to the profession at large, though space and participation may be limited. Registration will be accepted on a first-come, first-serve basis. The Workshop registration fee is \$190 (\$170 for ATC subscribers) and includes the cost of workshop luncheons and refreshments. A late fee of \$25 will be imposed on registrations postmarked after December 1, 2006. Persons interested in registering should complete, detach, and submit the Registration Form to ATC, or register using the ATC Online Store at: www.ATCouncil.org.

Hotel Reservations. A block of rooms at the San Mateo Marriott Hotel is being held at a special negotiated rate of \$139 per night (single occupancy). To reserve a room, contact the Marriott Hotel reservations department at 800/556-8972. Ask for the "ATC-35 Third National Earthquake Ground Motion Mapping Workshop" rate. Reservations must be received on or before Nov. 15, 2006 (cut-off date). See map on third page.

THIRD ATC-35/USGS NATIONAL EARTHQUAKE GROUND-MOTION MAPPING WORKSHOP: SAN MATEO, CALIFORNIA

PRELIMINARY PROGRAM

THURSDAY, DECEMBER 7, 2006

8 a.m.: Workshop Registration

8:30 a.m.: Welcome, Meeting Purpose, and Overview;
Christopher Rojahn

Part I: Issues for Preparation of USGS Probabilistic National Ground-Motion Maps

8:40 a.m.: General Comments by Part I Moderator;
Paul Somerville

8:55 a.m.: Overview of Input from Regional USGS Workshops, and Introductory Comments on Issues in Part I; *Mark Petersen**

Issue I-A: Which ground motion attenuation relationships should be used for national ground-motion mapping?

9:35 a.m.: Next Generation Attenuation (NGA) Relationships for Western U.S. Shallow Crustal Earthquakes; *Norman Abrahamson**

10:00 a.m.: Relationships for Subduction Zone Earthquakes; *David Boore**

10:20 a.m.: Coffee Break

10:40 a.m.: Relationships for Central and Eastern U.S. Earthquakes;
*Gail Atkinson**

11:00 a.m.: Impacts of Choices for Attenuation Relationships on Mapped Ground Motions, and USGS Preliminary Plan; *Arthur Frankel**

11:40 a.m.: Discussion and Conclusions

12:20 p.m.: LUNCH

Issue I-B: Should the reference geological condition used for national ground-motion mapping be changed?

1:20 p.m.: Options for Soil and Rock Reference Site Conditions in the Western U.S.; *Robert Youngs**

1:40 p.m.: Options for Soil and Rock Reference Site Conditions in the Central and Eastern U.S.; *Chris Cramer**

2:00 p.m.: Impacts of Choices for Reference Site Conditions on Mapped Ground Motions and USGS Preliminary Plan; *Mark Petersen**

2:20 p.m.: Discussion and Conclusions

2:45 p.m.: Coffee Break

Issue I-C: Should near-source directivity effects be incorporated in national ground-motion mapping?

3:05 p.m.: Effects of Near-source Directivity on Average Horizontal Component and Fault-strike-normal and Strike-parallel Components of Ground Motion and Alternatives for Incorporating Effects in Ground-motion Mapping; *Paul Spudich and Brian Chiou**

3:30 p.m.: How Should Ground Motions for Average Horizontal Component and Fault-strike-normal and Strike-parallel Components be Interpreted for Use in Design?; *Kenneth Campbell**

3:50 p.m.: Impacts of Incorporating Directivity Effects on Mapped Ground Motions, and USGS Preliminary Plan; *Mark Petersen**

4:10 p.m.: Discussion and Conclusions

Issue I-D: Should time-dependent probabilities be incorporated in national ground-motion mapping?

4:35 p.m.: Issues and Alternatives for Incorporating Time-dependent Probabilities in National Ground-motion Mapping, and USGS Preliminary Plan; *Robert Wesson**

5:05 p.m.: Discussion and Conclusions

5:25 p.m.: Day 1 Closure

FRIDAY, DECEMBER 8, 2006

Part II: Issues for Selection and Modification of Ground-Motion Maps for Use in Design

8:30 a.m.: General Comments by Part II Moderator; *E.V. Leyendecker*

8:40 a.m.: Overview of Issues and Processes for Developing Design Maps for Building Design; *Ronald Hamburger**

9:00 a.m.: Overview of Issues and Processes for Preparing Design Maps for Bridge Design; *Bruce Johnson**

Issue II-A: Which return periods should be selected for design and how should they be determined? Should the probabilistic maps be bounded by deterministic ground motions and how should the bounds be quantified?

9:20 a.m.: Rationale for the Current Design Maps with 2500-year Return Period and Deterministic Bounds Used in Building Practice; and Evaluations Planned for Design Map Updating by Project 07 Task Committee of the NEHRP Provisions Update Committee (PUC); *Charles Kircher**

9:55 a.m.: Rationale for Development of Design Maps with 1000-year Return Period Proposed for the AASHTO Seismic Specifications for Highway Bridges; *Roy Imbsen**

10:20 a.m.: Coffee Break

10:40 a.m.: How do Return Periods and Design Provisions for Seismic Loading Compare with Those Used for Other Hazards?; *James Harris**

11:10 a.m.: Risk-targeted Approach to Selecting Return Periods for Design Maps; *Nicolas Luco**

11:40 a.m.: What Maps are Needed for Secondary Performance Objectives?; *William Holmes**

12:00 p.m.: LUNCH

1:00 p.m.: Discussion and Conclusions

Issue II-B. How should design response spectra be developed using the design ground-motion maps?

1:40 p.m.: Is the Uniform Hazard Spectrum Adequately Defined by the Two-period Construction or Should Additional Periods be Used?; *E.V. Leyendecker**

2:00 p.m.: Should Uniform Hazard Spectra be Used for Design? How Should Design Response Spectra be Determined Considering Uniform Hazard Spectra from Design Maps and Hazard Deaggregation Data?; *Allin Cornell**

2:30 p.m.: Development of Design Maps and Provisions for Horizontal and Vertical Ground Motions for Short-to-long-period Structures for a Range of Site Conditions; *C.B. Crouse**

2:55 p.m.: Coffee Break

3:15 p.m.: Discussion and conclusions

Part III: Map Products and New Directions

3:45 p.m.: General Comments by Part III Moderator; *E.V. Leyendecker*

Issue III-A. What paper maps and electronic products should be provided for users from national ground-motion mapping (e.g., ground-motion values, deaggregation maps including "epsilon" and acceleration time histories.)

3:55 p.m.: Current Products and USGS Preliminary Plan; *Stephen Harmsen**

4:25 p.m.: Discussion and Conclusions

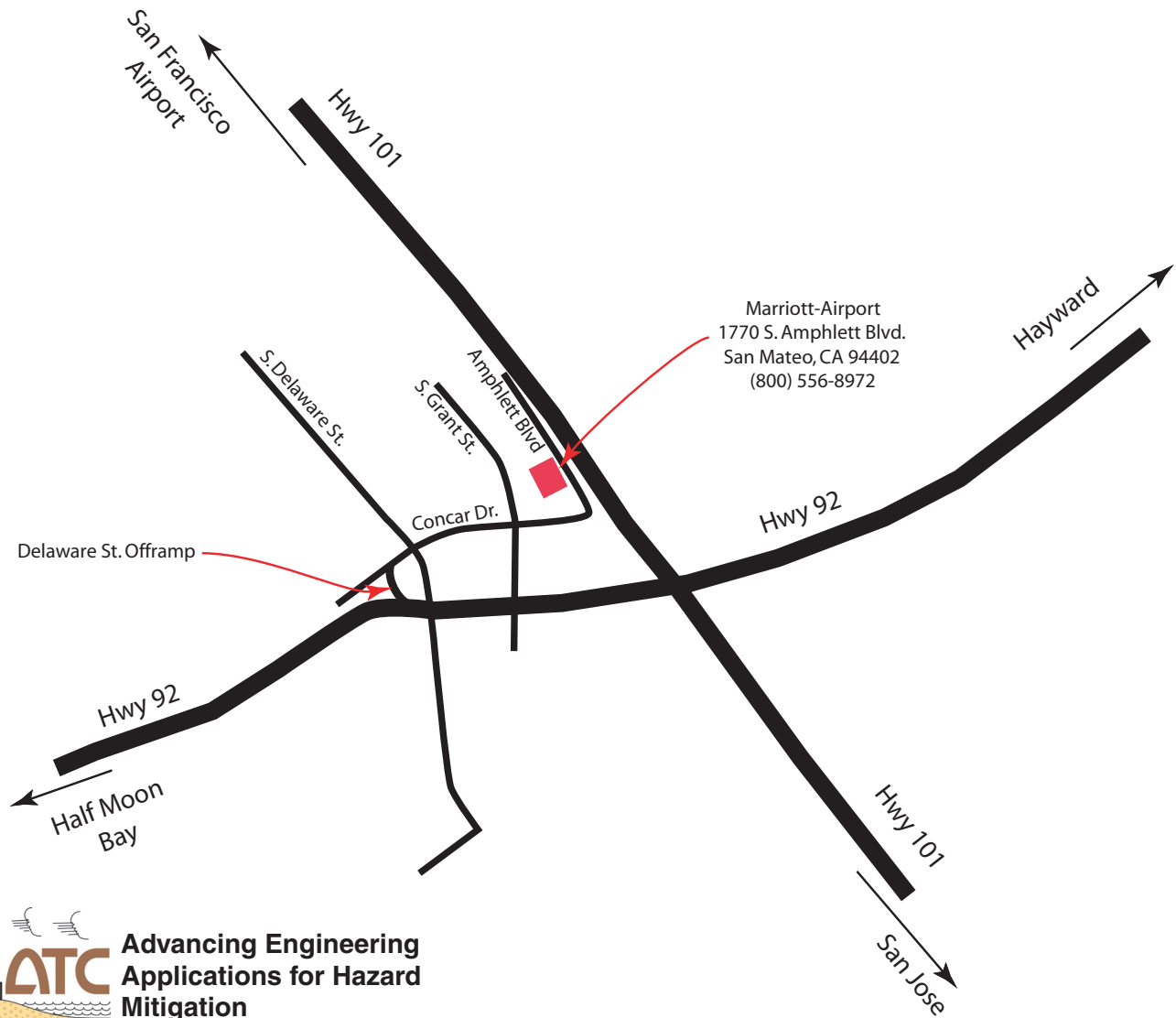
4:55 p.m.: Concluding Workshop Comments by USGS; *Mark Petersen*

5:10 p.m.: Closing Remarks; *Christopher Rojahn*

5:15 p.m.: Workshop Closure

* A 5-minute (nominal) period for initial questions and comments will follow prepared remarks by speakers.

**THIRD ATC-35/USGS NATIONAL EARTHQUAKE GROUND-MOTION MAPPING WORKSHOP:
SAN MATEO, CALIFORNIA:
Map to Hotel and Registration Form**



**Advancing Engineering
Applications for Hazard
Mitigation**

THIRD ATC-35/USGS NATIONAL EARTHQUAKE GROUND-MOTION MAPPING WORKSHOP REGISTRATION FORM

NAME(S) _____

ORGANIZATION _____

ADDRESS _____

CITY/STATE/ZIP CODE _____

BUSINESS PHONE AND FAX NUMBERS _____

E-MAIL ADDRESS _____

Seminar Registration Fee: \$190 per registrant (\$170 per ATC subscriber) \$ _____

Please enroll me as an ATC subscriber (\$35 per year, individual domestic rate) \$ _____

Late Registration Fee: add \$25 per registrant (if postmarked or faxed after December 1, 2006) \$ _____

TOTAL ENCLOSED \$ _____

Payment may be made by check or credit card (MasterCard or VISA). If paying by credit card, please provide the following information: MasterCard VISA # _____ Exp: _____ / _____

Cardholder's signature _____

Checks should be made payable to ATC. Please mail or fax your completed form with the appropriate payment to:

Applied Technology Council, 201 Redwood Shores Pkwy, Suite 240, Redwood City, CA 94065 FAX: 650/593-2320