

**EARTHQUAKE ENGINEERING RESEARCH INSTITUTE
COMMITTEE ON CONTINUING EDUCATION**

FEBRUARY 1987

SUBCOMMITTEE TO CREATE SLIDE SETS ON THE 19 SEPTEMBER 1985 MEXICO EARTHQUAKE

MEMBERS:

Chris Arnold, Vit Bertero, George Brogan, Ted Canon, Ted Christensen, Lloyd Cluff, Gene Cole, Bob Hanson, Walter Hays, E. V. Leyendecker, Miguel Santiago, J. P. Singh, and Peter Yanev

SLIDE SET I: GENERAL OVERVIEW:

ESSENTIAL INFORMATION

SLIDE IDENTIFICATION NUMBER: Mexico I-1

SHORT TITLE: Cocos and North American Plate Intersection

PHOTOGRAPHED BY: No applicable

OTHER CREDITS: Artwork prepared by U.S. Geological Survey

TIME AND LOCATION OF SLIDE: Prepared 10/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Geologic profile across the Cocos and North American plates showing subduction zone and rate of movement per year. This is a high seismicity zone having frequent large earthquakes.

SLIDE IDENTIFICATION NUMBER: Mexico I-2

SHORT TITLE: Mexico City Aerial View

PHOTOGRAPHED BY: William Stone (NBS)

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/26/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Aerial view of Mexico City showing the central historic district and the Latino Americana tower. The density of buildings and the large proportion of undamaged buildings can be seen.

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SLIDE IDENTIFICATION NUMBER: Mexico I-3

SHORT TITLE: Location of Accelerograph Stations

PHOTOGRAPHED BY:

OTHER CREDITS: Artwork prepared by National Bureau of Standards (NBS)
Data provided by Universidad Nacional Autonoma de Mexico
(UNAM)

TIME AND LOCATION OF SLIDE: Prepared 10/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Location of three key accelerograph stations whose records were available shortly following the quake. The SCT station gave the best record for the zone of heavy damage.

SLIDE IDENTIFICATION NUMBER: Mexico I-4

SHORT TITLE: Aerial View of SCT Looking Southwest

PHOTOGRAPHED BY: William Stone (NBS)

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/26/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Aerial view looking sothwest of the Communications Center, location of free-field accelerograph station.

SLIDE IDENTIFICATION NUMBER: Mexico I-5

SHORT TITLE: Interior Collapsed Intersection of SCT

PHOTOGRAPHED BY: Edgar V. Leyendecker

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/27/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Closeup of northwest interior corner of the Communications Center where the progressive collapse appears to have been initiated. Heavy damage at this facility virtually cut off external communication between Mexico and other countries.

SLIDE IDENTIFICATION NUMBER: Mexico I-6

SHORT TITLE: SCT Ground Shaking Records

PHOTOGRAPHED BY:

OTHER CREDITS: Artwork prepared by U.S. Geological Survey
Data Provided by UNAM

TIME AND LOCATION OF SLIDE: Prepared 10/85

SUMMARY OF WHAT THE SLIDE DEPICTS: SCT (communication center) east-west components of acceleration, velocity, and displacement for the Sept. 19, 1985 earthquake.

SLIDE IDENTIFICATION NUMBER: Mexico I-7

SHORT TITLE: SCT Response Spectra

PHOTOGRAPHED BY:

OTHER CREDITS: Artwork prepared by National Bureau of Standards
Data provided by UNAM.

TIME AND LOCATION OF SLIDE: Prepared 10/85

SUMMARY OF WHAT THE SLIDE DEPICTS: East-west component response spectra for the SCT site, September 19, 1985 quake.

SLIDE IDENTIFICATION NUMBER: Mexico I-8

SHORT TITLE: Aerial view of Nuevo Leon Looking Northwest

PHOTOGRAPHED BY: William Stone (NBS)

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/26/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Aerial view looking northwest of the collapsed Nuevo Leon Building. Hundreds died in the collapse.

SLIDE IDENTIFICATION NUMBER: Mexico I-9

SHORT TITLE: Debris Removal at Nuevo Leon

PHOTOGRAPHED BY: Felix Yokel (NBS)

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/25/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Workmen removing debris on the west side of Nuevo Leon. Foundation modifications may have contributed to the failure of the structure.

SLIDE IDENTIFICATION NUMBER: Mexico I-10

SHORT TITLE: Damage in Juafez Apartment

PHOTOGRAPHED BY: William Stone (NBS)

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/26/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Aerial view of two of the buildings in the Juarez apartment complex. Two collapsed structures are visible; the rightmost structure was 13 stories and the one at the left was 8 stories. Only the northern 1/3 of the 13 story building collapsed. The remaining portion was later removed using dynamite.

SLIDE IDENTIFICATION NUMBER: Mexico I-11

SHORT TITLE: Eight Story Structure

PHOTOGRAPHED BY: Edgar V. Leyendecker

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/25/85

SUMMARY OF WHAT THE SLIDE DEPICTS: View looking north of the collapsed 8-story building. The 13-story building is visible in the background. Several other eight-story buildings, partly visible at the left apparently suffered little damage.

SLIDE IDENTIFICATION NUMBER: Mexico I-12

SHORT TITLE: Pino Suarez Towers Looking North

PHOTOGRAPHED BY: Edgar V. Leyendecker

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/27/85

SUMMARY OF WHAT THE SLIDE DEPICTS: View looking north of the Pino Suarez Towers. Originally there were five structures at this site. Three central 21-story buildings and two flanking 14-story buildings. These government office towers were one of the few steel frame structures to collapse during the earthquake (although it should also be noted that the majority of buildings in Mexico City use concrete construction).

Two 21-story buildings may be seen in the background. A 14-story building north of the 21-story building collapsed on top of an adjacent 14-story building to its south, leading to its collapse.

SLIDE IDENTIFICATION NUMBER: Mexico I-13

SHORT TITLE: Aerial View of Continental Hotel

PHOTOGRAPHED BY: William Stone (NBS)

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/26/86

SUMMARY OF WHAT THE SLIDE DEPICTS: Aerial view of the Continental Hotel, where different sections of the building collapsed when pounding or hammering occurred at nonstructural joints.

SLIDE IDENTIFICATION NUMBER: Mexico I-14

SHORT TITLE: Hammering of Unequal Height Buildings

PHOTOGRAPHED BY:

OTHER CREDITS: Computer graphics by National Bureau of Standards

TIME AND LOCATION OF SLIDE: Prepared 10/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Building hammering was widespread in Mexico City. This slide depicts collision between two buildings of unequal height.

SLIDE IDENTIFICATION NUMBER: Mexico I-15

SHORT TITLE: Hammering of Equal Height Buildings

PHOTOGRAPHED BY: Edgar V. Leyendecker

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/27/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Eight story office building near the Pino Suarez Towers. Failure was induced by hammering with collapse occurring first in the building on the left. The building on the right was near collapse.

SLIDE IDENTIFICATION NUMBER: Mexico I-16

SHORT TITLE: Aerial view of Hospital General

PHOTOGRAPHED BY: William Stone (NBS)

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/26/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Aerial view looking southwest of the Hospital General where two buildings (6 and 8 stories) collapsed.

SLIDE IDENTIFICATION NUMBER: Mexico I-17

SHORT TITLE: Rescue Operations at Hospital General

PHOTOGRAPHED BY: Edgar V. Leyendecker

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/25/85

SUMMARY OF WHAT THE SLIDE DEPICTS: The collapse of a number of buildings at the Hospital General required massive rescue operations. Rescue was slow due to the difficulty in searching through debris and search for survivors.

SLIDE IDENTIFICATION NUMBER: Mexico I-18

SHORT TITLE: Juarez Hospital

PHOTOGRAPHED BY: Edgar V. Leyendecker

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/27/85

SUMMARY OF WHAT THE SLIDE DEPICTS: View looking east of the Hospital Juarez, where several hundred persons were trapped in the maternity ward.

SLIDE IDENTIFICATION NUMBER: Mexico I-19

SHORT TITLE: Severely Damaged Building

PHOTOGRAPHED BY: Edgar V. Leyendecker

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/27/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Most of the 1,000,000 + engineered buildings in Mexico City were undamaged or at least relatively undamaged. There were also buildings that met the intent of most buildings codes for major earthquakes, that heavy damage is permitted but collapse is prevented. The neighboring building in the foreground was not so fortunate.

SLIDE IDENTIFICATION NUMBER: Mexico I-20

SHORT TITLE: Aerial View of Relatively Undamaged Buildings

PHOTOGRAPHED BY: William Stone (NBS)

OTHER CREDITS:

TIME AND LOCATION OF SLIDE: 9/26/85

SUMMARY OF WHAT THE SLIDE DEPICTS: Aerial view of the U.S. Embassy and the Sheraton, a 21-story structure which had only minimal damage and was in use after the earthquake.
