



## Light Fixtures, Earthquakes, and School Children

### Full Mitigation Best Practice Story

#### *Los Angeles County, California*



**Los Angeles, CA** - The Los Angeles Unified School District (LAUSD) is second in size only to the New York City School District. At present, the District is composed of over 900 schools, serving over 800,000 students, and employing 57,000 full-time and 24,000 part-time staff. The LAUSD provides public education services to a 708 square mile area including the cities of Los Angeles, Bell, Carson, Cudahay, Gardenia, Huntington Park, Lomita, Maywood, San Fernando, South Gate, Vernon, and West Hollywood; portions of 18 other cities; and the unincorporated areas of Los Angeles County.

At the time of the 1994 Northridge Earthquake, the LAUSD facilities were illuminated with suspended ceilings and imbedded pendant lighting systems. These lights tend to fall from the ceiling when impacted by strong seismic motion. Hundreds of lighting units fell onto desks in the classrooms when the earthquake hit.

Fortunately, the earthquake occurred early in the morning when the schools were closed. As a result of this experience the LAUSD, with the support of FEMA, decided to undertake the seismic retrofitting or replacement of pendant lights to increase life safety, reduce the earthquake injury risk, and to meet current building code standards.

In the Northridge Earthquake, 5,500 buildings owned by LAUSD were damaged with total damages currently estimated at \$134 million. Under Section 406 of the Stafford Act, FEMA funded \$3.1 million for damaged, unbraced pendant ceiling and lights. In addition, \$45 million were obligated to mitigate unbraced pendant ceiling and light systems of the same design that were not damaged.

The reinforcement and/or replacement of the unbraced pendant lights in the Los Angeles Unified School District will reduce the high risk of injury to the more than 800,000 school children during the next earthquake event.

#### Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region IX**

State: **California**

County: **Los Angeles County**

City/Community: **Los Angeles**

## Key Activity/Project Information

Sector: **Public**  
Hazard Type: **Earthquake**  
Activity/Project Type: **Retrofitting, Non-structural; Retrofitting, Structural**  
Activity/Project Start Date: **04/1994**  
Activity/Project End Date: **12/1995**  
Funding Source: **Hazard Mitigation Grant Program (HMGP)**  
Funding Recipient: **Critical Facility - School**  
Funding Recipient Name: **LAUSD**

## Activity/Project Economic Analysis

Cost: **\$48,100,000.00 (Actual)**  
Non FEMA Cost:

## Activity/Project Disaster Information

Mitigation Resulted From Federal  
Disaster? **Yes**  
Federal Disaster #: **1008 , 01/17/1994**  
Value Tested By Disaster? **No**  
Repetitive Loss Property? **Unknown**

## Reference URLs

Reference URL 1: <http://www.nifc.gov>  
Reference URL 2: <http://www.oes.ca.gov/Operational/OESHome.nsf/1?OpenForm>

## Main Points

- At the time of the 1994 Northridge Earthquake, the LAUSD facilities were illuminated with suspended ceilings and imbedded pendant lighting systems. These lights tend to fall from the ceiling when impacted by strong seismic motion.
- Seismically retrofitted or replaced pendant lights to increase life safety, reduce the earthquake injury risk, and to meet current building code standards.
- The reinforcement and/or replacement of the unbraced pendant lights in the Los Angeles Unified School District will reduce the high risk of injury to the more than 800,000 school children during the next earthquake event.