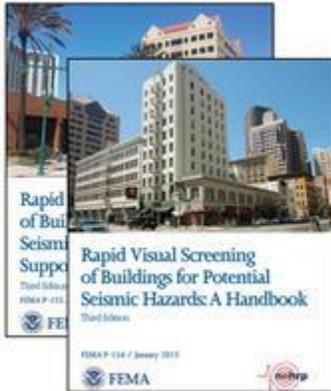# Three FEMA Tools to Screen Buildings for Earthquake Risk

## FEMA P-154 Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA P-154, *Rapid Visual Screening of Buildings for Potential Seismic Hazards*, provides a fast, non-intrusive checklist-like method to identify buildings that may pose an unacceptably high collapse risk in a future earthquake, before the earthquake occurs. The method requires expertise common to most building professionals such as structural engineers, building inspectors, and firefighters. The screening takes 10 to 30 minutes per building. It can be done using observations made while walking around the outside of a building and ideally using observations of interior spaces such as garages, mechanical rooms, and places without suspended ceilings, where key structural weaknesses are most apparent. The method enables the user to distinguish buildings that may pose an unacceptable collapse risk, and therefore warrant detailed seismic evaluation, from those that probably do not. Owners and local officials can use the data to plan more-detailed analysis of buildings that warrant it, evaluate emergency-response needs, and develop hazard-mitigation projects.

## FEMA E-74 Reducing the Risks of Nonstructural Earthquake Damage

FEMA E-74, *Reducing the Risks of Nonstructural Earthquake Damage—A Practical Guide*, explains the sources of nonstructural earthquake damage in simple terms and provides methods to reduce potential risks. Nonstructural earthquake damage includes things like fallen suspended ceilings, overturned mechanical and electrical equipment, and damage to contents such as tall furnishings. Nonstructural damage has accounted for most earthquake repair costs and inability to use buildings after several recent U.S. earthquakes. FEMA E-74 complements FEMA P-154 as a screening tool by identifying common problems that lead to costly impairment of structurally safe buildings and by offering practical solutions to those problems.

## ROVER, Rapid Observation of Vulnerability and Estimation of Risk

ROVER is FEMA's free mobile software that automates the paper-based pre- and post-earthquake building safety screening of FEMA P-154 and ATC-20. ROVER Version 2.0.1 works on any device with a web browser and data connection. It includes RedROVER, software for exporting ROVER pre-earthquake data to FEMA's HAZUS-MH risk-estimation software. It captures digital photos and geolocates the buildings being evaluated. It allows one to import pre-existing data. ROVER allows for one-time, same-day data entry to a built-in database, eliminating the need to transcribe paper forms, create an ad-hoc database, or link digital photos, and no delay before the data are available to local officials or other users. ROVER facilitates remotely managed screening, so the screener can receive instructions and assistance on safety evaluation from coordinators or experts who may be far away.