

FEMA

2020 NEHRP PROVISIONS: DESIGN EXAMPLES, TRAINING MATERIALS, AND DESIGN FLOW CHARTS (FEMA P-2192)

From Lessons Learned and Research Results to Improvements of Building Codes, Standards and Design Practices

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2020 NEHRP Recommended Seismic Provisions: Design Examples, Training Materials, and Design Flow Charts
FEMA P-2192-V1/November 2021
Volume I: Design Examples

2020 NEHRP Recommended Seismic Provisions: Design Examples, Training Materials, and Design Flow Charts
FEMA P-2192-V2/November 2021
Volume II: Training Materials

2020 NEHRP Recommended Seismic Provisions: Design Examples, Training Materials, and Design Flow Charts
FEMA P-2192-V3/November 2021
Volume III: Design Flow Charts

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- This new FEMA NEHRP publication is to support the 2020 NEHRP Recommended Seismic Provisions for New Buildings and Other Structures (FEMA P-2082) and ASCE/SEI 7-22 Standard.

How Will the Webinar Series and FEMA P-2192 Resource Help You?

- Share the interpretation, thoughts, considerations, and supporting research results for the new changes in the 2020 *NEHRP Provisions* and ASCE/SEI 7-22.
- Provide an opportunity to meet with the experts who led the development of the major seismic code changes in this cycle of *NEHRP Provisions* and ASCE/SEI 7-22 update.
- Illustrate how to apply the new provisions and procedures in design example and provide reference of training materials and design flow charts.



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How the FEMA NEHRP Helps to Increase Earthquake Resilience

- FEMA mission – reduce suffering of the disaster survivors
- Studies and post-disaster investigations show that preparedness, protection and mitigation are most effective ways to save lives, reduce property damage and disaster impacts.
- A recent FEMA report *Building Code Saves: A Nationwide Study of Loss Prevention* shows in selected high seismic regions (CA, OR, WA and New Madrid area) buildings conforming modern building codes save \$60 million annualized losses from earthquake hazards.
- FEMA NEHRP strives
 - improve seismic resistant national standards and model buildings with new research results and lessons learned information.
 - encourage at-risk communities to adopt up-to-date model building codes.
- **Design Practitioners and Building Professionals connect the dots from strong seismic building codes to earthquake resilient buildings for at-risk communities.**

DON'T WAIT FOR THE NEXT DISASTER ADOPT MODERN BUILDING CODES NOW!

Hazard-Resistant Building Codes Are Affordable

The construction features that allow buildings to survive natural disasters are not expensive, on average they amount to 2%–2½% of total building construction costs. For a 0.7% cost increase, a building will have the same ability to withstand shaking during an earthquake. A 2% cost premium will provide the most significant, visible savings and other features that help a house survive high winds during a hurricane. In addition, 1.2%–1.7% cost increase over standard construction costs will raise the ground floor, generating the “breakout” needed to withstand most floods. As shown in the graphic below, a small upfront investment buys a lot of protection.

Every \$1 spent
on mitigation in
new code
construction saves
\$11 in disaster
repair and recovery
costs



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FEMA NEHRP Provisions Related Resources

- Download the FEMA P-2192 series <https://www.nibs.org/bssc#resources>
 - FEMA P-2192-V1 2020 NEHRP Provisions: Design Examples
 - FEMA P-2192-V2 2020 NEHRP Provisions: Training Materials
 - FEMA P-2192-V3 2020 NEHRP Provisions: Design Flow Charts
- Other Related Publications on NEHRP Provisions [FEMA Media Library | FEMA.gov](#)
(1-800-480-2520 for free hard copy)
 - FEMA P-2156 *The Role of the NEHRP Recommended Seismic Provisions in the Development of Nationwide Seismic Building Code Regulations: A Thirty-Five Year Retrospective*
 - FEMA P-2082-1&2 *NEHRP Recommended Seismic Provisions for New Buildings and Other Structures Vol 1&2* 2020 Edition
 - FEMA P-2078 *Procedures for Developing Multi-Period Response Spectra at Non-Conterminous United States Sites*
 - FEMA P-749 *Earthquake-Resistant Design Concepts An Introduction to the NEHRP Recommended Seismic Provisions for New Buildings and Other Structures*
 - *Recommended Future Topics and Research Needs Identified During the 2020 NEHRP Provisions Update, BSSC Report*
 - FEMA P-2191 *A Step Forward - Recommendations for Improving Seismic Code Development, Content, and Communication* (to appear).

