

Our seismic engineering services cover the full range of relevant technical and safety areas:

- Site Geology & Seismology
- Seismic Geotechnical Engineering
- Performance-Based Specification
- Seismic Analysis & Design
- Earthquake Loss Modelling
- Independent Technical Review / Peer Review
- Walkdowns & Post-Earthquake Inspections

MMI offers these services to the oil & gas, commercial, nuclear, process and insurance sectors.

Site Geology & Seismology

MMI Engineering uses state-of-the-art seismic hazard analysis techniques to assess seismic hazard at a site.

We use probabilistic and deterministic procedures to quantify seismic hazard in terms of response spectra and time histories and develop project specific design criteria.

Seismic Geotechnical Engineering

Working in tandem with Geosyntec experts, MMI engineers have expertise in the assessment and mitigation of earthquake related ground failures such as liquefaction, lateral spread, surface fault rupture and landslides, including selection and design of suitable foundation solutions to resist such effects.

Seismic Analysis & Design

MMI's earthquake engineers have expertise in structural dynamics, seismic design, requalification and seismic retrofit design. We use sophisticated analytical tools such as ABAQUS, SAP2000, LSDYNA, USFOS along with SDOF tools to study the dynamic response of structures, equipment and systems.

This service area includes:

- Performance-Based Specification (e.g. linking design criteria to safety classification)
- Definition of Seismic Design Criteria (e.g. seismic input, in-structure amplification, damping, allowable damage)
- Development of SDOF, MDOF, frame & finite element models to suit problem
- Structural Models (steel, RC, masonry) & equipment Representations
- Pseudo-static, Dynamic, Elastic & Non-Linear Pushover, Response Spectrum & Time-History Analyses
- Hand Calculations for Member Design (international seismic codes)
- Detailed Investigation of Connections & Ensuring Ductile Detailing
- Equipment Anchorage Evaluations
- Development of Seismic Retrofit Schemes
- Seismic Probabilistic Safety Assessment (PSA)
- Seismic Fragility Development

Earthquake Loss Modelling

Using our extensive experience of the real effects of earthquakes, along with access to relevant data sources, MMI can appraise all types of facility for as-built earthquake vulnerability. This can range from desktop studies through to detailed site inspections. When coupled with definition of the seismic hazard, risk opinions can be developed to facilitate prioritised risk management.

Independent Technical Review

MMI's in-depth experience of all aspects of seismic engineering, coupled with the personal depth of experience of key staff means that we can effectively and constructively review designs and assessments undertaken by others where added assurance is required.

Post-Earthquake Inspections

MMI earthquake engineers have witnessed the effects of damaging earthquakes first-hand. This experience adds validation to analytical studies and adds great credibility to judgement-based opinions. Our engineers have seen notable earthquakes such as Northridge, CA (1994), Izmit, Turkey (1999), and Gujarat, India (2001).