

Building Industry and Earthquake Damage in the Arab region

**Professor Dr.Eng. Ramez RASLAN, Faculty of Engineering,
University of Damascus**

**Talking about construction and Earthquake damage in the Middle East
is better done in a reverse sequence**

**-Firstly: Modern Construction where the same technology as in the rest of
advanced world is adopted i.e.:**

**Multi story construction mainly in reinforced concrete, steel or composite
framing type.seismic loading is resisted by R.C shear walls, framing or steel
diaphragms.**

**Base Isolation System is not yet even theoretically introduced and hence not yet
applied.**

**-Secondly: Where the problems persist as far as Seismic Resistance is concerned
and where incidents often happen.**

A. Old stone construction:

**It extends from pre historic ages until probably the Arab Islamic Era when they
used soil originated construction material and timber for construction.**

Many structures were damaged as a result of minor earth quakes.

**Among many only examples of those structures where we were assigned to limit
the damages caused will be shown.**

B. Protecting Natural Hills:

**The very old of such type were constructed within caves or in deep faults like in
Petra (Jordan) or Maaloula (Syria).**

**Such caves when were subject to seismic effect cracks and some times and
collapse occurred.**

**The more recent are those citadels which were constructed during the crusade
era on top of hills.**

**Such hills under natural erosion including seismic attack are gradually losing
stability of their slope and the stone construction on top which they are supposed
to protect.**

Problems of all types of construction defined above will be illustrated and how such structures are or should be maintained will be demonstrated.