Earthquake resilient foundation for low-rise buildings

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ABSTRACT: Earthquakes affect large populations resulting in high demands for earthquake resilient buildings. In earthquake affected areas, devastation of housing facilities are major issues challenging authorities during recovery and reconstruction phase of disaster response. These create 'housing stresses' that pressurize the state and the society for quick solutions. Mobilizing people to participate in the reconstruction process is vital for quick resolution but lack of construction skills and absence of user friendly technology to enable people participation are impediments. Presently available seismic isolation technologies in the market are high tech and require special skills to install them. Therefore, it discourages people participation in reconstruction. This could be reversed if a simple user friendly technology is available to boost housing rebuild. This paper presents a concept of a low tech easy to build seismic isolation technology for low-rise building to withstand seismic impact. In addressing this, the paper presents technical details of the system elaborating how it responds to seismic activities to prevent dynamic ground movement from disturbing static state of the building super structure. Substantiating this, the paper outlines the factors of how different elements resiliently respond to seismic movements, reduce fabric collapse, increase ductility, and reduce drift demand & displacement of building due to the efficacy of the foundation design. This simple user friendly low tech seismic isolation technology is a viable solution to people seeking to build low-rise buildings in earthquake prone areas. This will also help reduce 'housing stresses' experienced in earthquake affected areas by social initiatives.