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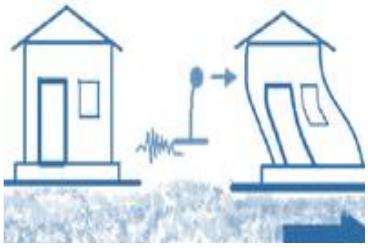
SEISMIC BEHAVIOR OF BUILDINGS MADE OF BLOCK SOLUTION ULTRA-LIGHT BUILDING SYSTEM



Block Soluation *Modular Building Units* with less mass (***more than 100 times lighter than reinforced concrete - 23 kg/m^2 vs. 2,400 kg/m^2***) has several advantages. One of the major advantages, related to its light weight in addition to speedy construction, is related to seismic design. Based on the fact that seismic forces are inertia forces resulting from accelerating mass, thus, the lower the mass of the building, the lower the seismic design forces. In addition, and due to its ultra-light weight, even during extreme conditions, such as parts of Block Solution units fall due to unexpected large seismic forces, these falling parts will have minimum harm effect on the building occupants.

It is expected that the system will have a favorable values of the essential seismic design parameters such as **R**-vale (*Seismic Modifications Factor*), Ω_0 (*Overstrength Factor*), and C_d (*Deflection Amplification Factor*) and most important the ductility (μ) that is considered as one of the most crucial keys for earthquake resistant design. For example, building systems with larger R-values are design based on lower design load value proportional to the value of R that can reach up to 5 to 6 times less than the required seismic design load for an unreinforced masonry wall. They values are being determined both experimentally and numerically according to code requirements in California, USA.

Another advantages of the ultra-light weight and relatively lower stiffness (flexibility) of the Block Solution modular units, and as the building weight decreases, its period increases that results in decreasing its seismic response by decreasing the corresponding spectral ground acceleration that reduces the seismic design demand of the structure (lower earthquake-generated forces).