Analysis of Phasing Seismic Retrofits Case Study

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Building performance and safety has always been a high concern in seismic areas, especially as certain building configurations and designs have proven inadequate and dangerous in large earthquakes. Building failures due to earthquake forces are combated by local seismic ordinances, which describe the types of buildings at risk and mandate when they are required to be seismically retrofitted. It is a legal requirement to comply with seismic ordinances, and it is financially and logistically advantageous to anticipate which building type the next wave of ordinances will target. This paper investigates the market and necessity of seismically retrofitting buildings, particularly soft story wood frame, non-ductile concrete, and welded steel moment frame structures. Seismic retrofits can be very disruptive and burdensome to building owners. This case study focuses on the voluntary seismic retrofit of a high-rise building that was split into five project phases, and how the phasing impacted the structure itself, the client, and the general contractor. It was found that phasing the retrofit created a deeper understanding of the building structurally, allowed flexibility within the execution of the retrofit, and influenced parties' risk. These findings are useful in demonstrating how phasing a retrofit can be advantageous or disadvantageous in future retrofits.