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Dr. Nebojsa Mojsilovic

ETH Zurich, Switzerland

Structural behavior of masonry walls with soft layers

A numerous series of static-cyclic shear tests on masonry elements (triplets), wallettes and full-scale unreinforced masonry (URM) walls with soft layer membrane placed in the bed joint to induce sliding have been performed during the last ten years at ETH Zurich within several research projects on the seismic behavior of unreinforced masonry walls with such layers. Specimens were constructed using typical perforated Swiss clay and calcium-silicate blocks and standard cement mortar. As a soft layer type, the five types were considered (rubber granulate, cork, cork-rubber granulate, extruded elastomer and bitumen). In order to develop the most suitable joint in the first phase the specimens were tested placing the soft layer in the mortar joint or between the mortar and the blocks. Based on the results, the so-called multi-layer bottom bed joint, which comprises a core soft layer protected by two layers of extruded elastomer and placed in the middle of mortar joint, was developed. As a core soft layer, the four-layer types were considered: rubber granulate, cork, cork-rubber granulate and bitumen. The following testing phase was aimed at choosing the most suitable core soft layer – rubber granulate. The final testing phase comprised five tests on story-high URM walls with rubber granulate core soft layers performed to investigate the influence of the size, the pre-compression level and the aspect ratio on the seismic behavior of URM walls with a multi-layer bed joint. An overview of the mentioned experimental work and corresponding analytical models will be presented. In addition, the short summary of the major findings of other research topics of the structural masonry group: deformation capacity of structural masonry, hybrid testing of masonry, advanced measurement technics, and reliability of structural masonry will be presented.

Program:

https://phd.uniroma1.it/web/seminar---structural-behavior-of-masonry-walls-with-soft-layers_ns3588EN_EN.aspx

Registration form:

https://docs.google.com/forms/d/e/1FAIpQLScWmh20BpQYgoY7ryjCUqktPDg6kHv8hwINXxitbhZKV_TiNw/viewform?usp=sf_link