HASAN KALYONCU UNIVERSITY
Civil Engineering Department

CE 499 Project Proposal Form

Part I. Project Proposer

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Part II. Project Information

Starting Term	2020 / 2021
Title of the Project	Structural Investigation of Masonry Buildings in Restoration

Project Description

Historical structures have important architectural and cultural values. Preservation of the historical structures is an essential issue. The construction types of the historical structures are generally masonry. Historical masonry structures consist of several components such as walls, arches, domes, vaults and pillars. Earthquake and settlement are main damage reasons for historical masonry structures. Repair and strengthening of an historical structure require specification. Intervention should be kept at a minimum level. There are several intervention methods for historical masonry structures. Stress concentrations, especially tensile stresses, will be investigated and compared to the existing damages in order to determine the damage reasons. Moreover, some repair and strengthening interventions will be recommended to prevent further damages.

Project Justification

Novelty	
New aspects	There is a need of experimental outcomes on masonry spandrels so to determine their real behavior in terms of both resistance and deformability. The main aim of the project is to point out the actual response of such structural components.
Complexity	
Challenging problem and issues	Masonry buildings are generally less durable compared to concrete or steel buildings for earthquake. At underdeveloped or developed countries, housings in rural and slum areas are builds from stone, adobe, briquet or baked soil brick in the form of masonry buildings by their users. These buildings show weak resistance under horizontal loads like earthquakeA lot of strengthening methods are used at masonry buildings to prevent these splits that occur because of earthquake movement and other splits. A lot of strengthening methods strengthens these buildings. Pressure resistance is high and pulling resistance is low at the materials like stone, adobe, briquet, and mortar and concrete. These materials are brittle. So they have a bit deformation when they are exposed to pressure and pulling influence. They don't counterpoise pulling resistance because of earthquake strength and changes occur on earth.
Related civil engineering science fields and subfields	
Tools	Analysis of Existing Masonry Structure, selection of strengthening material, using finite element method
Risk involved	
Potential problems and alternative solutions	
Minimum work required	10 weeks