

TRIANGULAR STONE BUTTRESS
CROSS-SECTION DESIGNED TO
MITIGATE DAMP

University College London, Dept. of Civil,
Environmental and Geomatic Engineering

MSc Thesis

Nicholas Fabrikant

Supervisor:

Professor Richard Simons

MSc DISSERTATION SUBMISSION

Student Name: NICHOLAS FABRIKANT (16005858)

Programme: MSc Civil Engineering

Supervisor: Professor Richard Simons

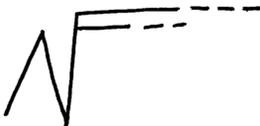
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Triangular Stone Buttress Cross-Section Designed To Mitigate Damp

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ABSTRACT

This paper addresses the problem of staining on stone buttresses and their adjacent stone walls due to damp. It hypothesizes a potential geometric cross-section design solution for buttresses to mitigate the effects of staining on stone surfaces by testing triangular cross-sectional properties and comparing all 3 variations in separate test cases to a traditional rectangular cross-section. Through Computational Fluid Dynamic (CFD) analysis, there appears slight variations in results in regard to the fluid flows over the 4 cross-sections in question, but not enough definitive data to draw any decisive conclusions. Results indicate that an equilateral (60° , 60° , 60°) triangular cross-section stone buttress may be able to increase drying times both along the buttress in question and its adjacent walls due to the triangular sides having increased exposure to sunlight throughout the annual sun-cycle as opposed to a rectangular cross-section. While the equilateral cross-section's structural resistance capacity is not quite that of the rectangular section, its mitigating shadowing effects are noteworthy enough to merit its continued research, and potential future implementation for damp mitigation.

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