Idea Presentation // *Recreating Earthquake Prone Historic Buildings with 3D Printing*

When New Zealand was colonized by Europeans in the mid 1800's very little was known about the potential earthquakes risk of the new land. Many buildings in the urban centres were built in masonry and brick and over the years these became our most treasured architecture. However in 2011 when the Christchurch earthquake struck, this lack of knowledge was tragically exposed with the collapse of un-reinforced masonry facades killing many people. This has created an ongoing debate about what to do with similar buildings in other cities with some people adamant that they should be preserved which is expensive, time consuming and often simply impractical to get them up to a safe condition. Digital technology however could offer a solution that satisfies the desire to preserve historic qualities while utilizing emerging construction processes. By 3d scanning the buildings they could be permanently recorded and these files could then be used to recreate them using large scale filament based 3d printers. This offers the potential for accurate reproduction of the historic shape and detail down to a fine resolution with much lighter and stronger materials that could be done both quickly and cost effectively.

Potential to rebuild partially damaged buildings using scans of intact original detail and CAD reconstructed using photogrammetry.


Image by Schwedeeb

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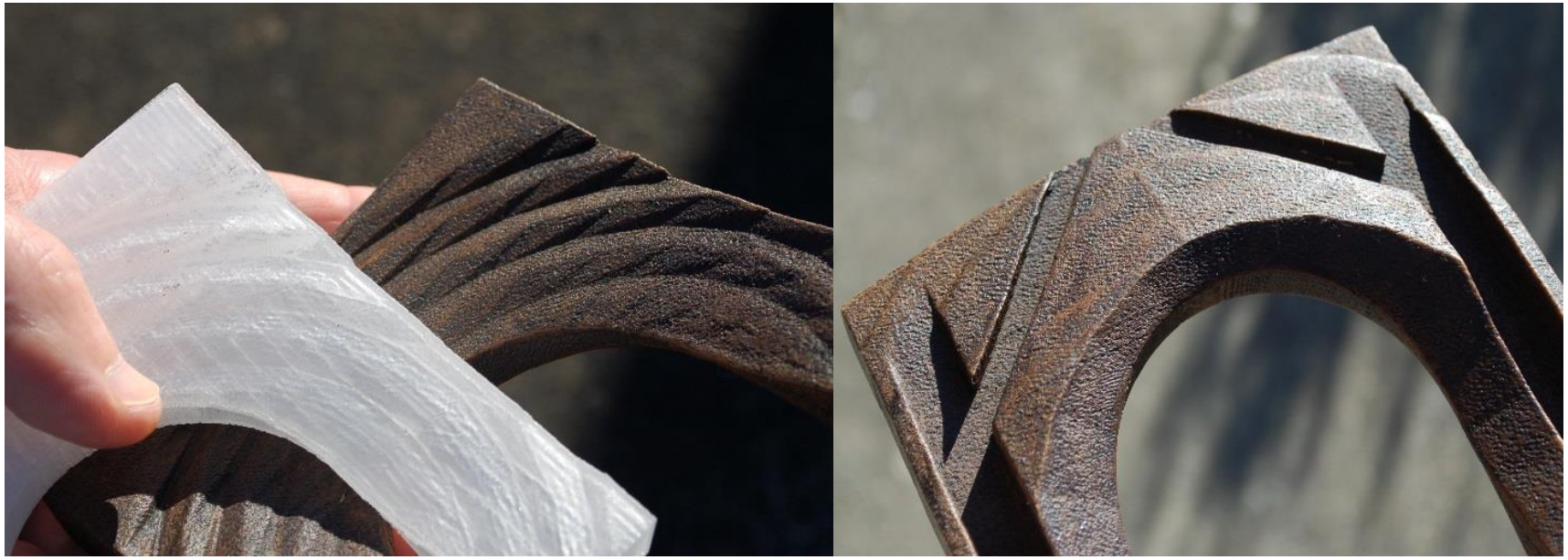
Archiving and reproducing earthquake prone facades in light weight materials

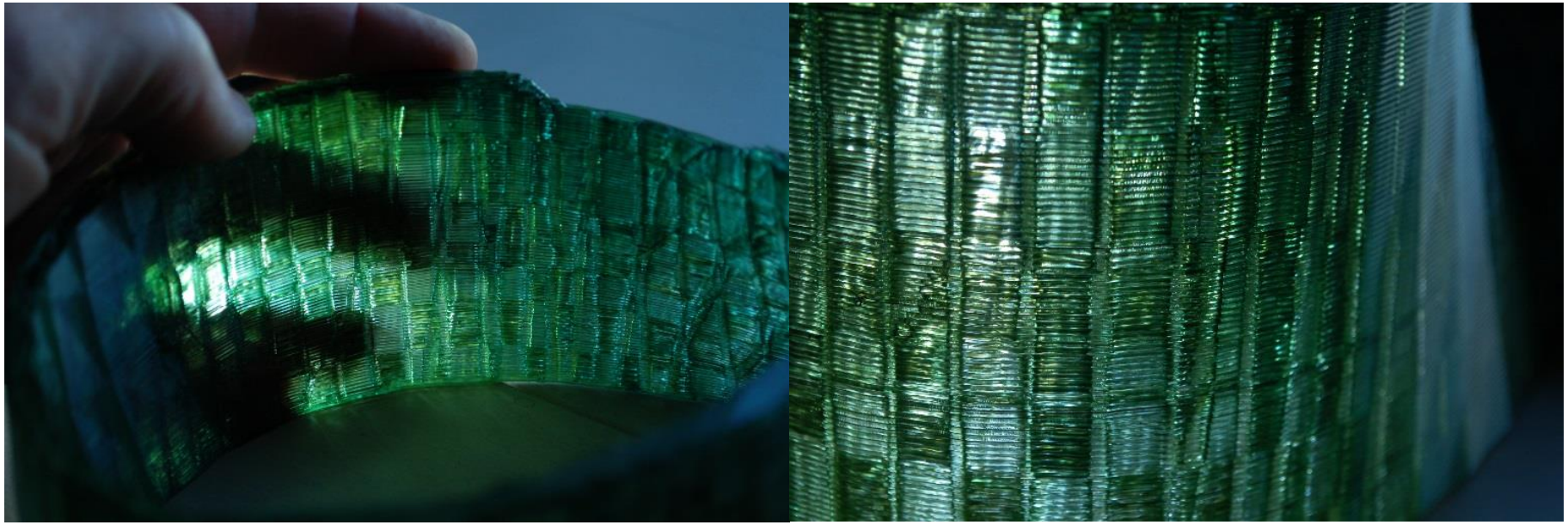
Image by Fabrice Dall'Anese

Image by https://bigrep.com/pr/press-media/

Building scaled 3D printing becoming a reality that is easily distributed over multiple machines (not high skilled artisan's)



Plant based (PLA) or recycled materials (PET) with areas removed on the back for steel structure, sprinklers and lighting?



Recycled plastic bottles (PET) could be used to create the façade.