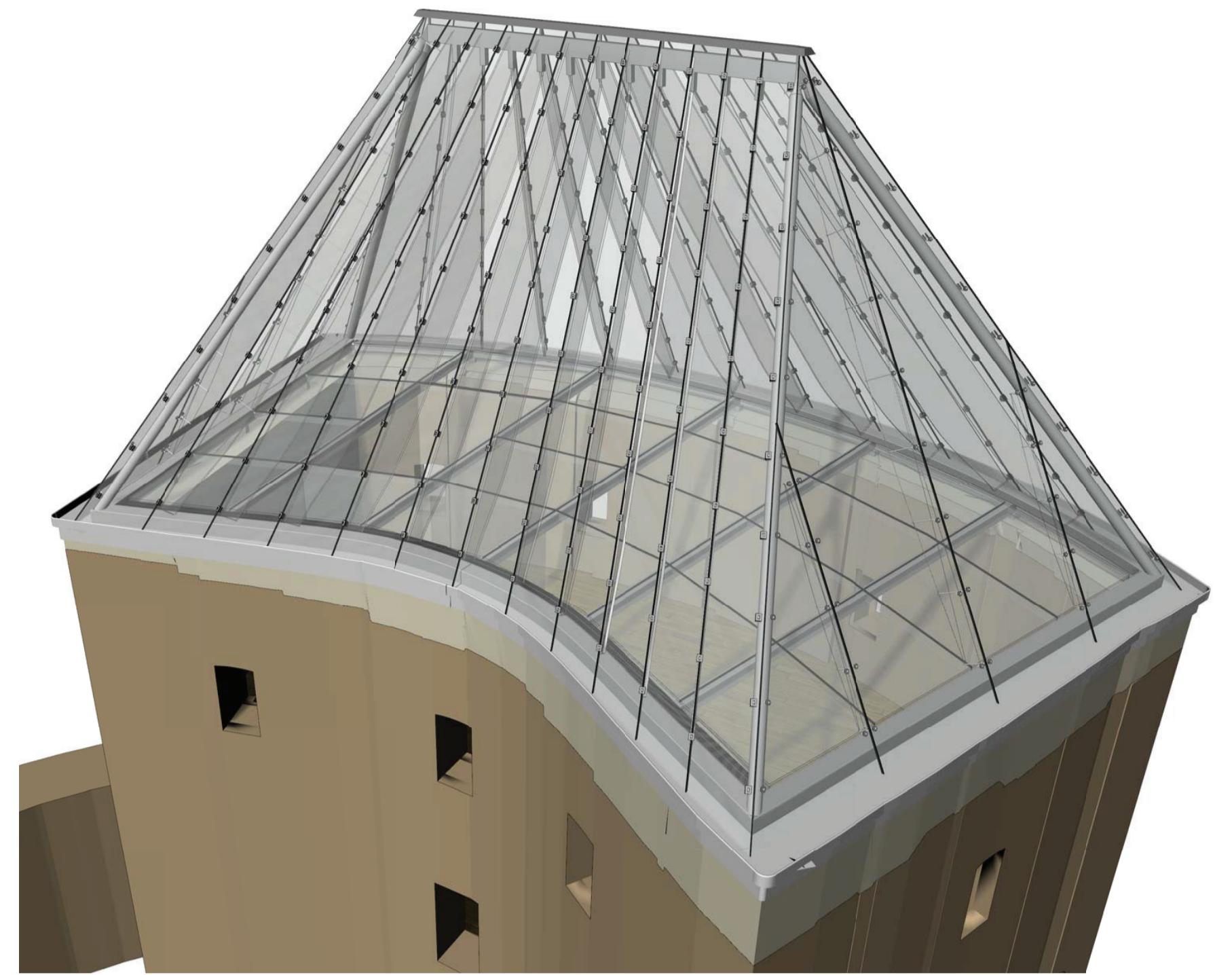


Transparent restoration of a historic building by use of structural glass elements

MSc Building Technology - Graduation Project



A render of the new glass roof on the castle

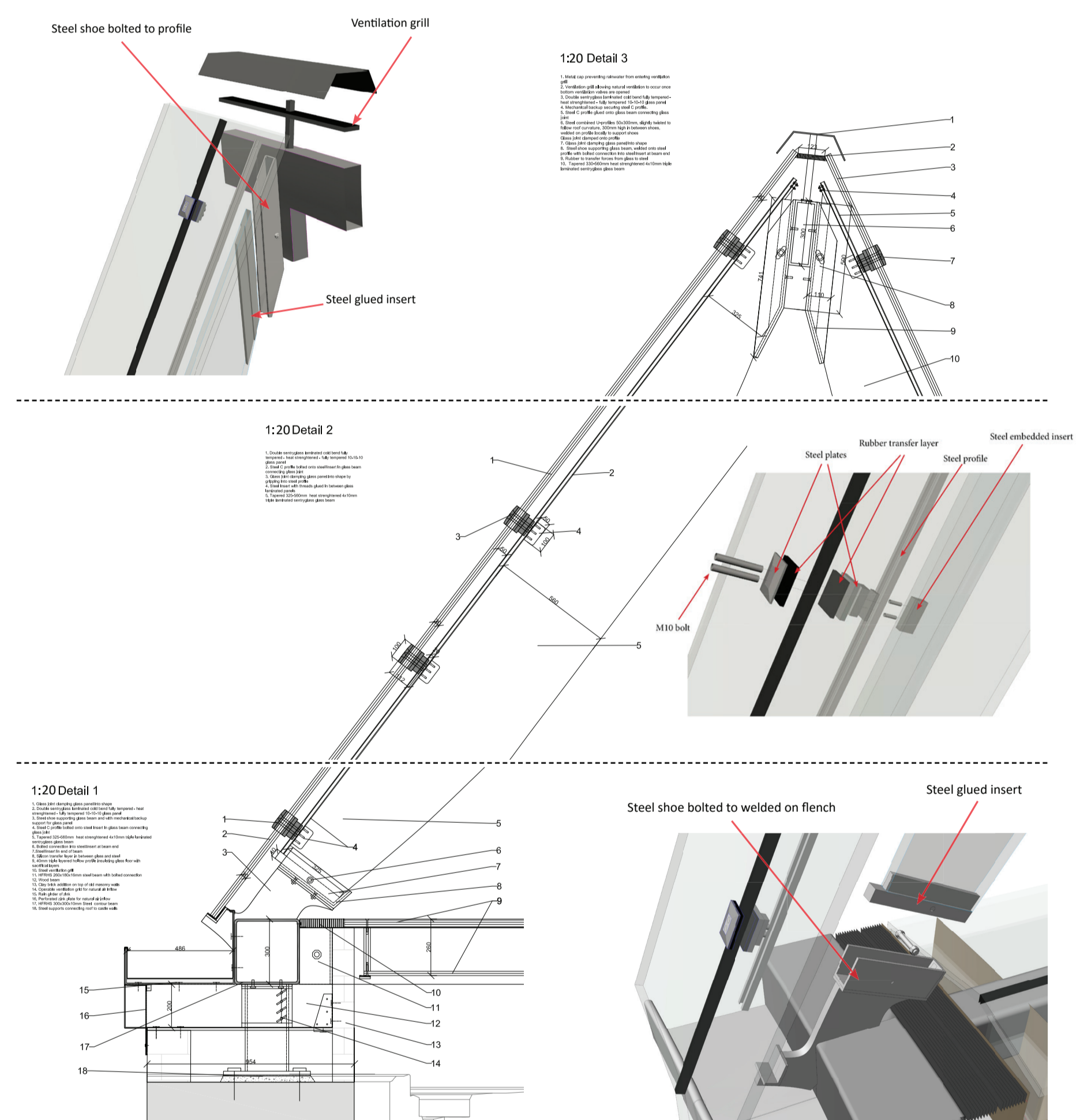


3D close-up of the new glass roof

The conversation about the restoration materialization of historic buildings is an ongoing debate. Additions are allowed only if they do not detract from the interesting parts of the building, integrate harmoniously, yet are distinguishable to prevent architectural falsification of the monument. Completely transparent additions to historic buildings of structural glass can be an answer to all the above demands.

As a research into these possibilities, a refurbishment proposal is made for the Ruin of Teylingen in the Netherlands. Here the original wood roof that is missing, is replaced by a structural glass roof. The roof has the same shape and size of the original roof, and closes off the donjon, allowing a new function to be put in the castle. Laminated heat-strengthened glass beams are connected to a slender steel contour frame. To create a fluid curvature, laminated heat-treated cold bend glass panels are used, which are held in place by clamping joints, connected onto the glass beams. Passive climate measures are used to prevent overheating of the glass roof. A glass floor allows the roof to be used as a lookout point over the refurbished area around the castle. The design is checked by structural calculations.

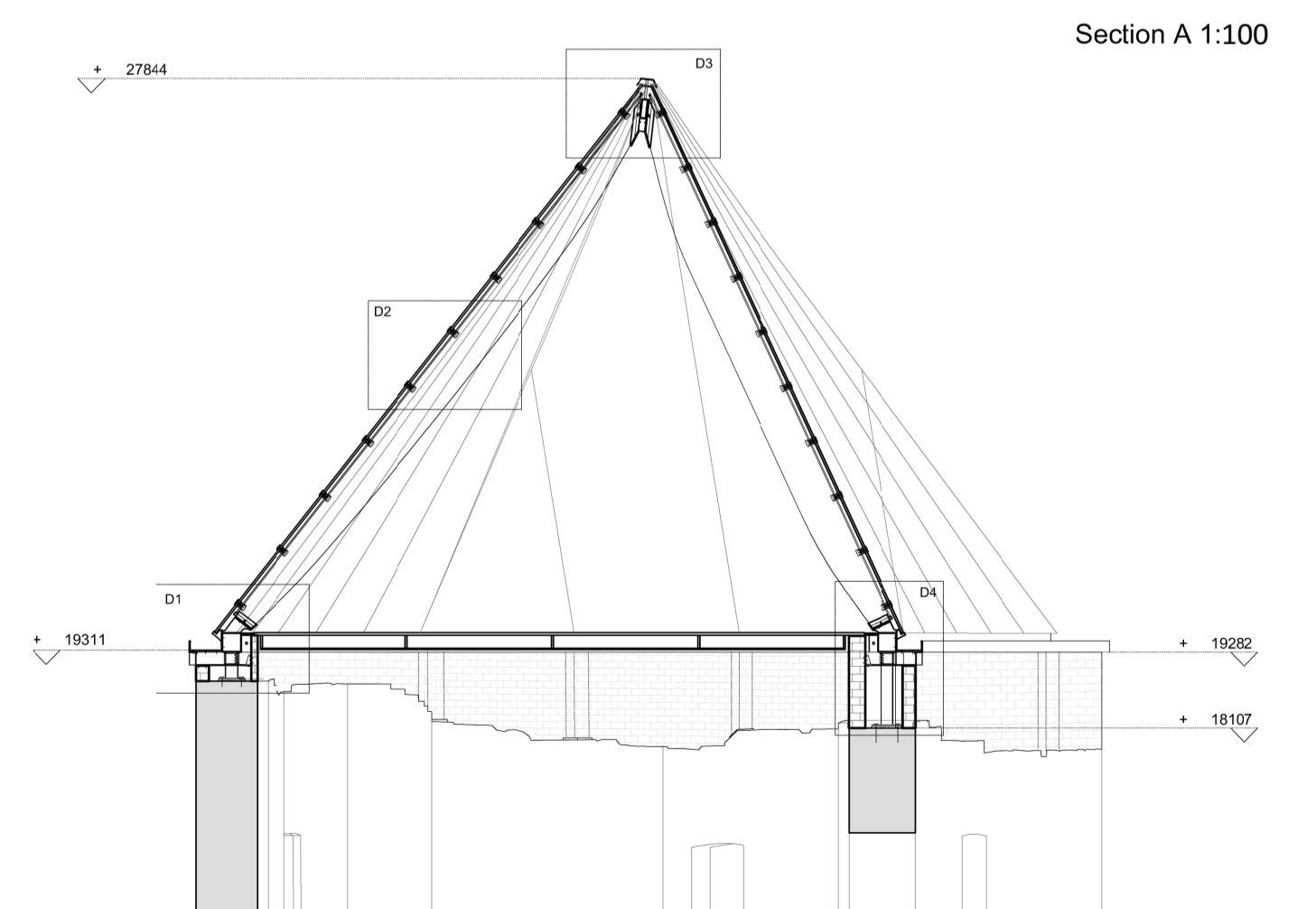
The product of the design process is an plausible and elegant solution for covering the historic building with an all glass roof that respects the historical and aesthetical value of the monument. This research has shown that if designed and detailing right, structural glass can be a very appropriate solution for the restoration of monumental buildings.



The current state of the building



The original state of the roof



A section and detailing of the glass roof design